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Orthodontics

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ABSTRACTS AND REVIEWS

J. A. Salzmann

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THE UNIVERSITY OF CHICAGO
 DEPARTMENT OF ORTHODONTICS

ORTHODONTIC CLINIC

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 FOR THE YEAR 1911

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No. 1

Original Articles

A DENTOFACIAL STUDY OF MALE STUDENTS AT THE UNIVERSITY OF MICHIGAN IN THE PHYSICAL HARDENING PROGRAM

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J. W. REYNOLDS, B.S., D.D.S., M.S.,* ANN ARBOR, MICH.

THE PROBLEM

THE pursuit of dentofacial study is not a new thesis. Many writers in the field of orthodontics have already contributed to this field of investigation. We chose twenty-six items for study. By close study of these items we propose to add at least a few pertinent facts to the body of scientific data which has already been reported.

It was our intention to learn something about orthodontics in a population not selected because of any orthodontic interest. Some of the questions we hoped to answer may be listed as follows:

1. What percentage of a population receive orthodontic treatment?
2. What degree of success is attained by the orthodontist?
3. What is the average time involved in the various stages of orthodontic treatment?
4. What percentage of a population needs orthodontic treatment?
5. What constitutes a malocclusion severe enough to warrant orthodontic treatment?
6. What malocclusions do not warrant orthodontic treatment?
7. Why do people want orthodontic treatment?
8. Why do they need orthodontic treatment?

This study was undertaken in partial fulfillment of the requirements for a Master of Science degree in Orthodontics.

*University of Michigan; now in Armed Forces overseas.

9. How do they react to orthodontic treatment?
10. What is the frequency ratio of anatomically correct occlusion?
11. What is the frequency ratio of the various classes of malocclusion (Angle)?
12. What can be learned about habits: (a) intraoral, (b) extraoral, (c) mouth breathing?

MATERIAL FOR STUDY

To make these observations, 500 male students were studied at random from a selected population. This group was twice removed from the average American male population. First, any university student body is selected at least to some degree on an economic as well as a physical basis, in spite of a notable effort to remove such barriers, especially in state institutions such as this one. Second, not every male student in the University could meet the requirements of the Physical Hardening Program from which our material was selected.

The ages of the students studied fell between the extremes of 16 and 32 years. The greatest frequency was 127 students at 20 years of age. This data is shown graphically in Fig. 1.

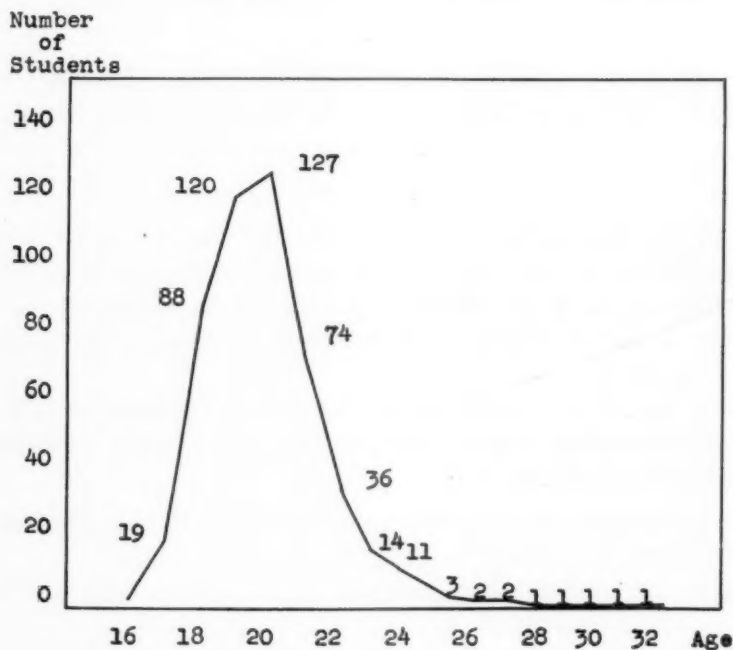


Fig. 1.

EQUIPMENT AND TECHNIQUE

A dental chair was placed in the gymnasium where the Physical Hardening Program is conducted and the students were called from their respective platoons in groups of five to report for examination. The examination was of a tongue blade nature. The observer indicated the grading for each student by giving to the recorder the representative number on the work sheet. Each observer

examined ten students and then alternated positions with the recorder. The grading was entirely the observer's opinion.

Seventy-five students were thus studied in groups of 25 each to develop a work sheet with sharp enough distinction in the various items graded to standardize the two observer's results. The work sheet was then revised to meet our more critical standards. The observations of the 75 students used in testing the study were discarded.

THE WORK SHEET

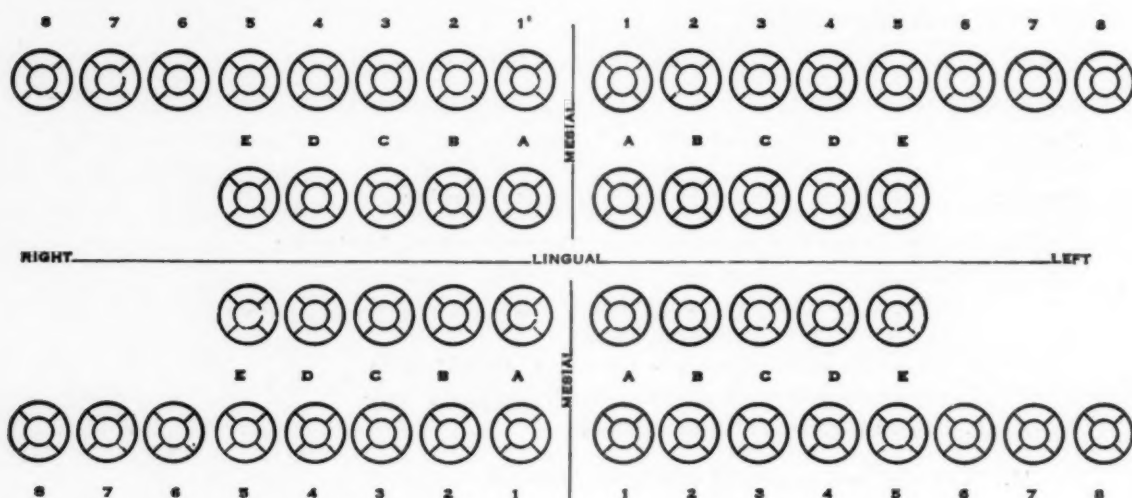
No.	Date
Place	Name
Observer	Date of Birth
Recorder	Section Number

- I. Observer to ask student regarding previous orthodontic treatment:
 1. When was active treatment started? date
 2. When was active treatment stopped? date
 3. Active treatment at present time?
 4. When was passive treatment (retainer) started? date
 5. When was passive treatment (retainer) stopped? date
 6. Passive treatment at present time?
- II. Was treatment successful (observer's opinion)
 1. Yes
 2. No
 3. Probably improved condition
- III. What is the student's reaction to orthodontic treatment?
(Ask only those who have had treatment)
 1. Favorable
 2. Unfavorable
 3. Indifferent
- IV. Speech defects (to be based on student's admission and observer's opinion)
 1. Lisp
 2. Stutter or stammer
 3. Articulatory defects
 4. Other speech defects (foreign accent not included)
- V. What is the student's opinion of the appearance of his dentition and dentofacial complex?
 1. Good
 2. Fair
 3. Bad
- VI. What is the student's opinion of his occlusal function? (ability to masticate food)
 1. Good
 2. Fair
 3. Bad
- VII. Would student like to have orthodontic treatment?
 1. Yes
 2. No
 3. Indifferent

VIII. What is the observer's opinion of the appearance of the student's dentition and dentofacial complex?

1. Good
2. Fair
3. Bad

IX. Chart of Dentition.



Code to be used on chart of dentition:

- X. Patient reports tooth was extracted
- M. Tooth not in evidence
- H. Hypoplasia of enamel
- D. Mottled enamel
- S. Supernumerary tooth
- (Fused tooth
- R. Rotation (observer will indicate degree of rotation)
 1. 45 degrees
 2. 90 degrees
 3. 135 degrees
 4. 180 degrees
- P. Peg tooth
- V. Deciduous tooth retained

X. Anatomically correct dentition

1. 32 teeth in occlusion
2. Third molars may be missing, extracted, or partially erupted

XI. Not anatomically correct dentition

1. No orthodontic treatment indicated

Include the following occlusal defects when they do not disturb the occlusal function or affect the patient psychologically

 - a. Spacing
 - b. Crowding
 - c. Rotation
 - d. Crossbite
 - e. Anteroposterior malrelation of opposing dental arches
 - f. Other
2. Missing or extracted teeth, no orthodontic treatment indicated
3. Orthodontic treatment indicated

4. Missing or extracted teeth, orthodontic treatment indicated
5. Maxillofacial treatment indicated
Include conditions in which the facial involvements require maxillofacial surgery and/or prosthodontic restoration in conjunction with orthodontic treatment

XII. Anterior crowding

1. Slight
2. Moderate
3. Extreme

XIII. Anterior spacing

1. Slight
2. Moderate
3. Extreme

XIV. Cross-bite —|—

XV. Class I or Neutroclusion*

1. Type I
2. Type II
3. Type III
4. Type IV
5. Type V

XVI. Class II or Distocclusion*

1. Division I
2. Division II
3. Subdivision

XVII. Extent of Distocclusion

1. $\frac{1}{2}$ cusp
2. 1 cusp
3. $1\frac{1}{2}$ cusp
4. 2 cusp

XVIII. Class III or Mesioclusion*

1. Type I
2. Type II
3. Type III

XIX. Extent of Mesioclusion

1. $\frac{1}{2}$ cusp
2. 1 cusp
3. $1\frac{1}{2}$ cusp
4. 2 cusp

XX. Overbite

0. End-to-end
1. One-third of clinical crown
2. Two-thirds of clinical crown
3. Three-thirds of clinical crown
4. Impinging

XXI. Open-bite

1. Occlusal contact occurs in incisor or canine region
2. Occlusal contact occurs in the premolars
3. Occlusal contact occurs in the molars
4. Posterior open-bite with anteriors in occlusion

*Classification of malocclusion (according to Angle's classification as given in Dewey, M., and Anderson, G.: Practical Orthodontia, ed. 5, St. Louis, 1935, The C. V. Mosby Co., pp. 86-87).

XXII. Over-jet

1. Labial surface of mandibular incisors in contact with lingual surface of maxillary incisors
2. Moderate space—about thickness of one tongue blade measured by tooth having least protrusion
3. Extreme space measured by tooth having least protrusion

XXIII. Intraoral habits recognized by observer

XXIV. Extraoral habits recognized by observer

XXV. Mouth breathing

1. Present
2. Absent

XXVI. Observer's opinion of functional disturbance in dentition. This shall include all students except those who fall in Group X or XI-1 and XI-2

1. Slight
2. Moderate
3. Extreme

EXPLANATION OF THE WORK SHEET AND DATA

To standardize the observations we developed a very critical work sheet. As before mentioned, every opinion was the observer's; the recorder *never* influenced the observer's work. Explanation is given of the various items on the work sheet, but some will need further definition. This will be given in conjunction with the results which follow.

All the percentages are figured on the basis of 500 students unless otherwise designated.

I. TREATED STUDENTS

Direct questioning was used to obtain our information regarding previous orthodontic treatment. We had to depend upon the student's memory and only relative dates could be derived. Here we learned that too few of the students who had received orthodontic treatment understood the various stages of treatment or recalled the exact time involved. However, the errors in our data which are based on this circumstance are admittedly of minor significance.

Number of treated students	97
Percentage of students treated	19.4
Number of treated students having passive treatment	29
Percentage of treated students having passive treatment	30.8
Number of students finished with passive treatment	19
Number of students still wearing retainer	10
Average time of active treatment	32 months
Average time of passive treatment	15 months

Fig. 2.

Ninety-seven students (19.4 per cent) had orthodontic treatment, Fig. 2. These students were all treated by an orthodontist or general dentist. In every instance, orthodontic appliances were used to accomplish the proposed adjustment in their dentition. The average time for active treatment was thirty-two

months. The minimum time for treatment was two months, and the maximum time was 120 months.

Of the 97 treated students, only 29 reported a period of passive (retainer) treatment. Nineteen of these treated students had completed the retainer period. The average time of passive treatment was fifteen months.

Fig. 3 shows the number of students treated at the various ages from 5 to 24 years. There are two peaks in this curve. The first peak at 8 to 10 years of age, and the second peak at 12 to 16 years of age.

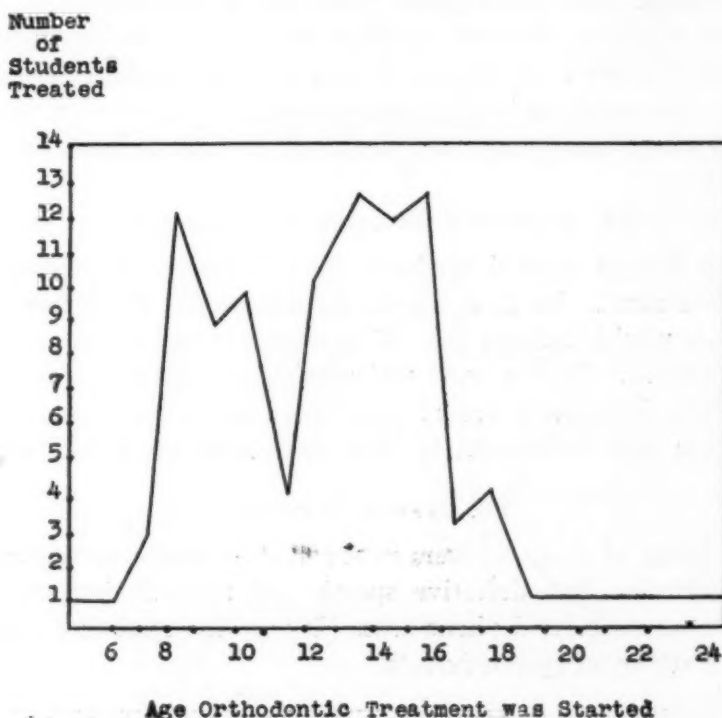


Fig. 3.

An interesting sidelight developed regarding the treated students: those having retention, and those not having retention. In an analysis of XI-3 and -4 we found 28 treated students needing further treatment. Only four of these reported a period of passive (retainer) treatment. This retainer period averaged eighteen months. At the time of our examination all four indicated the need of further treatment because of crowding; three of these were complicated with cross-bite, one with rotation, and one with a peg tooth.

There were 16 *other* students in the study that had completed a period of passive treatment. Their treatment was graded successful by the observer. Fifteen of these students had an average retainer period of 11.5 months. The extremes were three months and thirty-six months. The one student removed from the average computation had been wearing a space maintainer and we did not feel this should be included since he did not have a period of active treatment.

II. OBSERVER'S OPINION OF TREATMENT

We are fully aware of the weakness of this observation. It is impossible to look at a mouth after treatment and register the degree of success attained, having no idea of the pre-existing condition. We had to depend entirely upon the student's ability to describe his dentition before treatment. At best, this is very weak. We have *some* answers, and we feel that they fill a gap in our observations. As indicated on the work sheet, these observations are strictly the observer's opinion derived as explained above. Forty-seven of the 94 students who had completed their orthodontic treatment were successfully treated; of the remaining 47, there were 43 students who had probably been improved. However, there was obviously too much malocclusion remaining in these mouths to characterize the result as having been successful. There were, however, only four students whose treatment could definitely be said to have terminated unsuccessfully.

III. STUDENT'S REACTION TO TREATMENT

Eighty of the 94 treated students were favorably impressed with their orthodontic treatment. In Item II we reported only 47 successfully treated students. This would indicate that 33 students in the improved group were favorably impressed. Twelve were unfavorable to treatment; we made no attempt to record their many varied complaints so we shall not list any here. Only 2 students were indifferent to their treatment—an insignificant number.

IV. SPEECH DEFECTS

It is the belief of many workers in the field of speech correction as well as that of orthodontics that defective speech and malocclusion are in a small minority of instances related phenomena. It was this reasoning that prompted us to include a survey of speech defects.

SPEECH DEFECTS	NUMBER OF STUDENTS	PERCENTAGE
Lisp	16	3.2
Stutter or stammer	10	2.0
Articulatory defects		
Other defects	18	3.6
Total	44	8.8

Fig. 4.

At the time of admission to the University, every student is examined by the speech correction staff. Therefore, any student having a detectable speech defect has been informed of its existence by the speech department. We used this fact as the basis for dependability in our method of direct questioning. We were able to classify some of the speech defects when the student could not recall the classification given to him by the speech department. Foreign accent was not considered a speech defect. As shown in Fig. 4, we found 44 students (8.8 per cent) having one or more of the various types of speech defect. Sixteen (3.2 per cent) of these were lisps. Ten (2 per cent) gave stuttering or stammering as their difficulty. We found no articulatory defects which we

were inclined to characterize as such. Articulatory defects, if there were any, probably fell in the fourth category listed as *other defects*.

Under the heading *other defects* we found 18 students (3.6 per cent). These included the rhinolalias, pitch control, volume control, laryngeal voice, and any other speech difficulty that did not fit the previous headings.

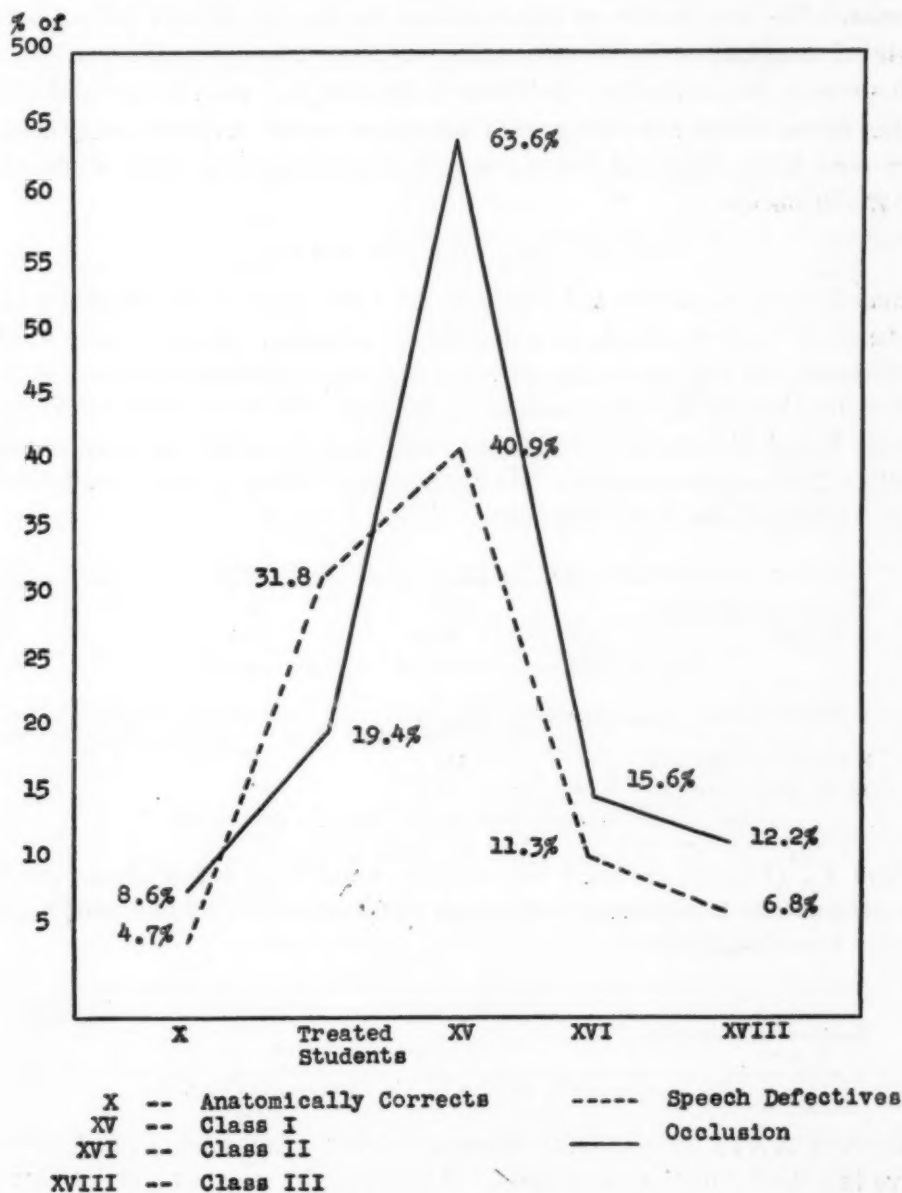


Fig. 5.

As shown in Items I and XI-3 and -4, 43 per cent of the population studied either has had or needs orthodontic treatment, yet only 8.8 per cent of the same population presented defective speech.

Fig. 5 shows a comparison of the distribution of 500 students classified on the basis of their occlusion with the distribution of 44 speech defectives taken

from this same population and superimposed over the same occlusal categories. These two groups were distributed as follows: anatomically correct, students having had treatment, Class I malocclusion, Class II malocclusion, and Class III malocclusion. We find the two populations tending to be parallel, with, however, a piling-up of speech defects among students who received orthodontic treatment. We are unable to say whether the speech defects influenced this number of students to have orthodontic treatment or not. We can say that speech defects are uniformly distributed through the various occlusal classes.

Our figure of 8.8 per cent speech defectives agrees very favorably with the 10 per cent figure reported by the speech department* in their study of the entire student body.

V, VI, VII, VIII, AND XXVI

Item V (Fig. 6) shows 422 students (84.4 per cent) to be satisfied with the appearance of their dentitions and dentofacial complex. Seventy-seven students (15.4 per cent) of the population were not satisfied with their appearance. Only one student thought his appearance to be bad. In Item VIII (Fig. 7) the observers found 411 students (82.2 per cent) to have good appearance, and 89 students (17.8 per cent) to have fair appearance. Thus, a close parallel existed between students' and observer's opinion (Figs. 6 and 7).

	GOOD APPEARANCE	FAIR APPEARANCE	BAD APPEARANCE
Number of Students	422	77	1
% of 500	84.4	15.4	0.2

Fig. 6.—Student's opinion of his appearance.

	GOOD APPEARANCE	FAIR APPEARANCE	BAD APPEARANCE
Number of Students	411	89	
% of 500	82.2	17.8	

Fig. 7.—Observer's opinion of the student's appearance.

Item VI (Fig. 8) revealed the amazing number of 494 students (98.8 per cent) to be satisfied with their masticatory function. Six (1.2 per cent) reported only fair functional ability.

	GOOD FUNCTION	FAIR FUNCTION	BAD FUNCTION
Number of Students	494	6	
% of 500	98.8	1.2	

Fig. 8.—Student's opinion of his functional ability.

In Item XXVI (Fig. 9) the observers found 152 students (30.4 per cent) to have impaired function as follows:† 113 slight, 38 moderate, and 1 extreme.‡

*Report of the Speech Clinic of the Institute for Human Adjustment. Speech Department of University of Michigan.

†Criteria for impaired function were as follows: rotation, crowding, spacing, cross-bite, mesiodistal malrelation of the opposing dental arches, overbite, open-bite, and over-jet.

‡Item XXVI was purposefully placed at the end of our work sheet. We wanted to make this observation after a complete study of the dentition had been made. By the same reasoning V, VI, VII, and VIII were placed first on the work sheet so the observer would be unfamiliar with the student's dentition and therefore his judgment would be unbiased. We especially wanted the observer's opinion in VIII to be a casual first impression prior to complete study of the existing conditions.

Item VII (Fig. 10) "Would student like to have orthodontic treatment?" Here we found 44 students (8.8 per cent) who would like to have orthodontic treatment. Three hundred sixty-two expressed no desire for treatment, and 6 were indifferent.

	SLIGHT FUNCTIONAL DISTURBANCE	MODERATE FUNCTIONAL DISTURBANCE	EXTREME FUNCTIONAL DISTURBANCE
Number of Students	113	38	1
% of 500	22.6	7.6	0.2

Fig. 9.—Observer's opinion of functional disturbance in student's dentition.

	STUDENTS DESIRING TREATMENT	STUDENTS NOT DESIRING TREATMENT	STUDENTS INDIF- FERENT REGARDING TREATMENT
Number of Students	44	362	6
% of 500	8.8	72.4	1.2

Fig. 10.

Five of the 6 students with only fair function (Fig. 8) wanted orthodontic treatment. The sixth student, 25 years of age, expressed no desire for treatment. We may conclude that 5 of the 152 students could not accommodate for their functional difficulties. This leaves 39 students desiring orthodontic treatment because they are not satisfied with the appearance of the dentofacial complex.

IX. RESULTS ON CHART OF DENTITION

Fig. 11 shows a collection of data without any significant meaning, useful, however, to verify an opinion when needed.

	X	M	H	D	S	—	R	P	√
Number of Students	173	357	13		1	1	110	11	10
% of 500	34.6	71.4	2.6		0.2	0.2	22	2.2	2.0

Fig. 11.—Collection of data in Item IX: X. Patient reports tooth (or teeth) extracted. M. Tooth (or teeth) not in evidence. H. Hypoplasia of enamel. D. Mottled enamel. S. Supernumerary tooth (or teeth). —. Fused tooth (or teeth). R. Rotation of one or more teeth. P. Peg tooth (or teeth). √. Deciduous tooth (or teeth) retained.

The code in Fig. 11 was used to mark the chart shown on the work sheet. The numbers and percentages shown in Fig. 11 refer to students. Each student may have presented an incidence of one or more of any heading listed.

X. ANATOMICALLY CORRECT DENTITION

This heading is a by-product of Item XI. It was our motive to establish a means of separating the dentitions on the basis of need for treatment and absence of need for treatment. It became apparent that some dentitions would be free from every item of malocclusion graded. That is to say, the teeth would be morphologically correct; there would be a virtual absence of spacing, an absence of crowding, open-bite, cross-bite, mesiodistal malrelation of the opposing dental arches, and over-jet and overbite would be within physiologic limitations. This group we decided to call anatomically correct. We divided this group into two parts; the first to include dentitions with all 32 teeth in oc-

clusion; the second, with third molars missing, extracted, or partially erupted. The two parts were necessary because of a great fancy on the part of many patients and dentists to dispense with third molars.

In this group there were 43 students (8.6 per cent) with anatomically correct dentition. Two of them presented speech defects. Both were stutterers. One was a mouth breather. Seven of the students in this group had received orthodontic treatment.

Overbite was reckoned on the basis of that fraction of the lower incisor crown which was overlapped by the upper. This group of 43 ranged from $\frac{1}{3}$ to $\frac{2}{3}$ overlap of lower clinical crowns and averaged $\frac{1}{2}$ of the clinical crown of the lower incisor.

In every individual of this anatomically correct group, over-jet in the sense of lack of contact was absent. In other words, the lower incisors were in contact with the lingual surfaces of the upper incisors in centric occlusion.

XI. NOT ANATOMICALLY CORRECT DENTITION

We decided to subdivide this group on the basis of a need for treatment—disregarding technique, nature of treatment, and all other extrinsic factors. Our first subdivision of XI-1 includes those slight irregularities that need no treatment; “. . . when they do not disturb occlusal function or affect the patient psychologically” as follows:

- a. Spacing.
- b. Crowding.
- c. Rotation.
- d. Cross-bite.
- e. Anteroposterior malrelation of the opposing dental arches.
- f. Other. This includes peg teeth, prosthetic restorations, etc.

SLIGHT IRREGULARITIES IN THE DENTITION NEEDING NO TREATMENT							
	XI-1	a. SPACING	b. CROWD- ING	c. ROTATION	d. CROSS- BITE	e. ANTEROPOST. MALRELATION	f. OTHER
Number of Students	208	50	144	33	26	45	8
% of 500	41.6	10	28.8	6.6	5.2	9.0	1.6

Fig. 12.

As shown in Fig. 12, we found a total of 208 students (41.6 per cent) not needing orthodontic treatment. Each student had one or more of the above-mentioned irregularities in his dentition. For example, the same student may have had upper spacing and lower crowding. Therefore, in adding the totals of *a* to *f* in Fig. 12 the sum exceeds the total number of students represented. The figures in each column represent the incidence of that particular irregularity.

XI-2 is a continuation of XI-1 except in this group there were some missing or extracted teeth other than the third molars. In XI-1 each dentition was a full complement of teeth from second molars forward. In XI-2 we found 93 students (18.6 per cent) not needing orthodontic treatment. To combine the results of XI-1 and XI-2 we have 301 students (60.2 per cent) not needing

orthodontic treatment in spite of the slight occlusal defects which categorically placed them in this section of anatomically incorrect dentitions.

XI-3. Orthodontic Treatment Indicated.—Disturbance of the student's masticatory function or psychological well-being on account of disfigurement were our criteria as to indication for orthodontic treatment. That is to say, orthodontic treatment was considered indicated when there was spacing, crowding, rotation, open-bite, cross-bite, anteroposterior malrelation of the opposing dental arches, or other irregularities sufficient to disturb the occlusal function or affect the student psychologically.

There were 104 students (20.8 per cent) with no missing or extracted teeth presenting sufficient malocclusion, as indicated on our work sheet, to warrant orthodontic treatment (Fig. 13).

	XI-3 ORTHODONTIC TREATMENT INDICATED (COMPLETE DENTITIONS)	XI-4 ORTHODONTIC TREATMENT INDICATED (MUTILATED DENTITIONS)	TOTAL OF XI-3 AND XI-4
Number of Students	104	52	156
% of 500	20.8	10.4	31.2

Fig. 13.

XI-4 is more of the same condition as in XI-3 except these students had missing or extracted teeth other than third molars. There were 52 students (10.4 per cent) in this category. To combine XI-3 and XI-4 there were 156 students (31.2 per cent) needing orthodontic treatment. This is shown in Fig. 13.

XI-5. Maxillofacial Treatment Indicated.—This group includes conditions, the facial involvements of which require maxillofacial surgery and/or prosthodontic restoration in conjunction with orthodontic treatment. We felt this division was necessary to place a proper limitation on XI-3 and XI-4. We did not happen to have any student requiring this type of treatment. There are, however, several students in the University that would fall in this category had they presented themselves for observation.

XII. CROWDING

In determining the extent of crowding in upper and lower anterior teeth, crowding was divided into slight, moderate, and extreme. Only the anterior segment was graded, consisting of the six anterior teeth of each arch. Fig. 14 shows the detailed distribution.

	SLIGHT UPPER	MODERATE UPPER	EXTREME UPPER	SLIGHT LOWER	MODERATE LOWER	EXTREME LOWER
Number of Students	147	12	2	242	16	5
% of 500	29.4	2.4	0.4	48.4	3.2	1.0

Fig. 14.—Crowding.

In slight crowding, the extent of constriction may be not more than one-third the width of the central incisor in the respective arch. This included those dentitions with slight waviness of the anterior teeth.

In moderate crowding the extent of constriction may be not more than the width of the central incisor in the respective arch.

In extreme crowding, the extent of constriction is more than the width of the central incisor in the respective arch.*

Slight crowding of the upper teeth was found in 147 students (29.4 per cent) of the 500 examined; slight crowding of the lowers in 242 (48.4 per cent).

Moderate crowding of the upper teeth was found in 12 (2.4 per cent) as compared with 16 (3.2 per cent) in the lower: extreme upper crowding was found in 2 (0.4 per cent) as compared with 5 (1 per cent) in the lower. Thus it is quite obvious that the lower anterior segment shows greater tendency toward constriction than the upper.

XIII. SPACING

The same means of grading was followed for spacing as for crowding, using the central incisor of the respective arch for determination of slight, moderate, and extreme spacing† (Fig. 15).

	SLIGHT UPPER	MODERATE UPPER	EXTREME UPPER	SLIGHT LOWER	MODERATE LOWER	EXTREME LOWER
Number of Students	82	7	1	31	3	0
% of 500	16.4	1.4	0.2	6.2	0.6	0

Fig. 15.—Spacing.

It was found that 82 (16.4 per cent) of the 500 students examined presented slight upper spacing as compared with 31 (6.2 per cent) for the lowers. Seven (1.4 per cent) presented moderate upper spacing as compared with 3 (0.6 per cent) for the lowers. Only 1 (0.2 per cent) presented extreme upper spacing as compared with none for the lowers.

Again attention should be called to the difference existing between upper and lower anterior segments. The upper shows greater tendency toward spacing than the lower (see conclusion under *Crowding*).

	NO. OF STUDENTS	% OF 500
Spacing of upper and lower teeth	24	4.8
Upper spacing and lower crowding	26	5.2
Lower spacing and upper crowding	5	1.0
Upper spacing	41	8.2
Lower spacing	5	1.0
Upper crowding and lower crowding	127	25.4
Upper crowding	29	5.8
Lower crowding	110	22.0
Total	367	73.4

Fig. 16.

Fig. 16 shows the number of students presenting either crowding or spacing or combinations of both in the upper and lower anterior segment of the dentition.

Of the 500 students studied, 367 (73.4 per cent) had some degree of crowding or spacing, the largest percentage showing upper and lower crowding in combination, with lower crowding next.

*Constriction of space in anterior segment created by missing or extracted teeth will be regarded as crowding and graded accordingly.

†Spacing associated with peg tooth or teeth will not be graded unless the existing space is more than enough to properly restore the affected tooth.

Fig. 17 shows the number of students of the anatomically incorrect group XI-1 and XI-2 not needing treatment who present either crowding or spacing or combinations of both in upper and lower anterior segments of the dentition.

Of the 301 students in this group, 173 had some degree of crowding or spacing, the largest percentage showing lower crowding, with upper and lower crowding in combination next.

	NOT ANATOMICALLY CORRECT GROUP, NOT NEEDING TREATMENT	% OF 173
Spacing of upper and lower teeth	10	5.8
Upper spacing and lower crowding	18	10.4
Lower spacing and upper crowding	2	1.2
Upper spacing	17	9.8
Lower spacing	2	1.2
Upper crowding and lower crowding	52	30.0
Upper crowding	12	6.9
Lower crowding	60	34.7
Total	173	

Fig. 17.

	NOT ANATOMICALLY CORRECT GROUP, NOT NEEDING TREATMENT WHO HAVE RECEIVED TREATMENT	% OF 37
Spacing of upper and lower teeth	1	2.7
Upper spacing and lower crowding	0	
Lower spacing and upper crowding	1	2.7
Upper spacing	2	5.4
Lower spacing	0	
Upper crowding and lower crowding	11	29.7
Upper crowding	4	10.8
Lower crowding	18	48.6
Total	37	

Fig. 18.

Fig. 18 shows the number of students of the anatomically incorrect group not needing treatment, who have received orthodontic treatment at some previous time. This group of students present either crowding or spacing or combinations of both in upper and lower anterior segments of the dentition.

Of the 60 students having received treatment and not needing further treatment, 37 had some degree of crowding or spacing, the largest percentage showing lower crowding, with upper and lower crowding in combination next.

Bearing in mind that in the nontreatment group there is a smaller percentage of malrelation existing (144, Class I; 14, Class II; 15, Class III), the above numbers (Figs. 16, 17, and 18) again tend to substantiate the greater tendency of lower anterior segment toward crowding and upper toward spacing (see conclusions under *Crowding* and under *Spacing*).

XIV. CROSS-BITE

This item shows the number of observed students presenting some degree of cross-bite, with the term cross-bite including anterior cross-bite, posterior cross-bite, complete buccal version, and complete lingual version. One hundred and twenty-five (25 per cent) of the 500 studied (Fig. 19) presented one or more

types of cross-bite ranging from the entire lower arch in cross-bite with the upper to one tooth in cross-bite with an opposing tooth or teeth.

It was found that 26 of the 125 did not indicate need of orthodontic treatment from XI-1d. Thus it is to be noted that 99 of the 156 needing treatment presented some degree of cross-bite.

	CROSS-BITES, INCLUDING ALL TYPES	CROSS-BITES NOT NEEDING TREATMENT	CROSS-BITES OF THE 156 NEEDING TREATMENT
Number of Students	125	26	99
% of 500	25	5.2	64.4% of 156

Fig. 19.

XV TO XIX (INCLUSIVE). CLASSIFICATION OF MALOCCLUSION

We have adhered strictly to Angle's classification.¹ The occlusion of the triangular ridge of the mesiobuccal cusp of the maxillary first molar in the buccal groove of the mandibular first molar has been used as a basis for classification.

Except in mutilated dentitions, we have arbitrarily chosen not to be influenced by the position of the anterior teeth or premolars in classifying the occlusion present.

One-half cusp or more of mesial or distal malrelationship was used to place the observed occlusion in Class II or Class III malocclusion. The extent of Class II and Class III was then graded by the measure of $\frac{1}{2}$ cusp, 1 cusp, $1\frac{1}{2}$ cusp, and 2 cusps or more of malrelationship (Figs. 20, 21, 22).

	XV CLASS I OR NEUTROCLUSION					
	TYPE I	TYPE II	TYPE III	TYPE IV	OTHERS	TOTAL
	16 3.2	28 5.6	1 0.2	31 6.2	242 48.4	318 63.6

Fig. 20.

	XVI CLASS II OR DISTOCLUSION			XVII DEGREE BY CUSPS			
	DIV. 1	DIV. 2	SUBDIV.	$\frac{1}{2}$	1	$1\frac{1}{2}$	2 OR MORE
	24 4.8	54 10.8	33 6.6	51 68	23 30.7	1 1.3	0 0

(% of 78)

Fig. 21.

	XVIII CLASS II OR MESIOCLUSION			XIX DEGREE BY CUSPS			
	TYPE I	TYPE II	TYPE III	$\frac{1}{2}$	1	$1\frac{1}{2}$	2 OR MORE
	40 8.0	15 3.0	6 1.2	33 54	24 39.5	3 4.9	1 1.6

(% of 61)

Fig. 22.

Of the 500 students studied, 63.6 per cent show Class I, 15.6 per cent show Class II (Class II, Div. 1, 4.8 per cent Class II, Div. 2, 10.8 per cent), 12.2 per cent show Class III (Figs. 20, 21, and 22).

XX. DEPTH OF BITE

The purpose of this item is to show the degree of depth of bite present. Overbite was reckoned on the basis of that fraction of the lower incisor crown which was overlapped by the upper incisor crown. Here we have included those students with impingement and end-to-end bite and have divided into thirds the height of the lower clinical crown, thus dividing depth of bite into 5 divisions. Thirty-four (6.8 per cent) of the 500 observed students had end-to-end bite, 195 (39 per cent) overlapped $\frac{1}{3}$ of the lower clinical crown, 196 (39.2 per cent) overlapped $\frac{2}{3}$ of the lower clinical crown, 45 (9 per cent) overlapped $\frac{3}{3}$ of the lower clinical crown and 17 (3.4 per cent) had impingement of the lower incisors against the tissue lingual to the upper incisors (Fig. 23).

	XX OVERBITE				
	END-TO-END	$\frac{1}{3}$ CLINICAL CROWN	$\frac{2}{3}$ CLINICAL CROWN	$\frac{3}{3}$ CLINICAL CROWN	IMPINGEMENT
Number of Students	34	195	196	45	17
% of 500	6.8	39.0	39.2	9.0	3.4

Fig. 23.

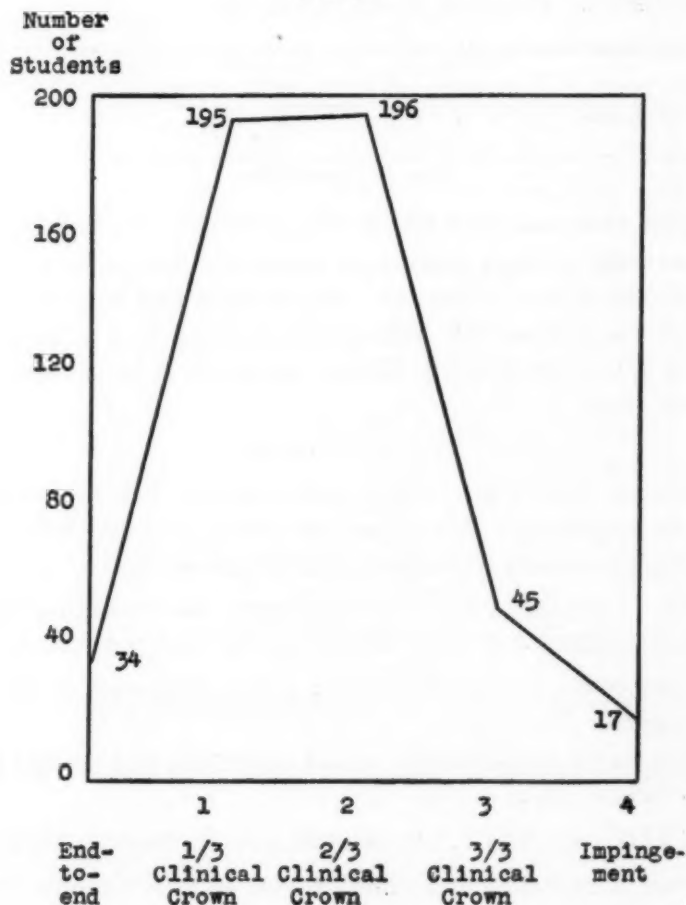


Fig. 24.

By the curve on Fig. 24, the average overlap is shown to be about one-half the lower clinical crown.

All students presenting impingement were placed in XI-3 or XI-4, needing orthodontic treatment due to impairment of function.

In all the anatomically correct dentitions observed (43), there were 20 with $\frac{1}{3}$ overlap and 23 with $\frac{2}{3}$ overlap of the clinical crown of the lower incisors.

XXI. OPEN-BITE

Of the 500 students observed, only 16 (3.2 per cent) presented some degree of open-bite. Hellman's study² of 1,036 children showed a percentage of 3.5 having open-bite of some degree. Hellman's age group was from 6 to 15 years of age as compared to the age range of 16 to 32 years in our observed students.

We have used four divisions in classifying open-bite: Division 1, where occlusal contact exists only as far forward as the incisor or canine region with the open-bite occurring more anteriorly; Division 2, with occlusal contact existing only as far forward as the premolar region; Division 3, occlusal contact existing only in the molar region; Division 4, posterior open-bite with the anteriors in occlusion. These are shown in Fig. 25.

	DIVISION 1	DIVISION 2	DIVISION 3	DIVISION 4
Number of Students	1	11	1	3
% of 500	0.2	2.2	0.2	0.6

Fig. 25.—Open-bite.

One student presented open-bite in the anteriors. He had Class I malocclusion. In those with occlusal contact in premolars and molars, 6 were Class I, 1 was Class II, and 4 were Class III. One student had occlusal contact only in the molars and was a Class III. The three students presenting posterior open-bite had Class III malocclusion. Hence, open-bite is to be found in all three types of malocclusion.

XXII. OVER-JET

In conjunction with depth of bite and open-bite, it is necessary to show the amount of over-jet present. We found 416 (83.2 per cent) with the labial surface of mandibular incisors in contact with lingual surface of maxillary incisors.

Thirty-five (7 per cent) had moderate space, not exceeding the thickness of one tongue blade measured at the tooth having the least protrusion.

Five (1 per cent) presented extreme space, measured at the tooth having the least protrusion.

All students with anatomically correct dentitions had contact of all anterior teeth.

XXIII AND XXIV. INTRAORAL AND EXTRAORAL HABITS

Habits were included in this study because of their possible association with malocclusion. Either we, as observers, were very poor in this department or the young men studied were reluctant to admit any such habits. We found only two students would admit having intraoral habits and exactly two other students

admitted having extraoral habits. To be sure this is an insignificant number. We still feel there is much to be learned from study of habits. Evidence shown in the growth study casts from the University of Michigan Elementary School is sufficient to arouse anyone's interest. Our study does not lend any information in the habit department.

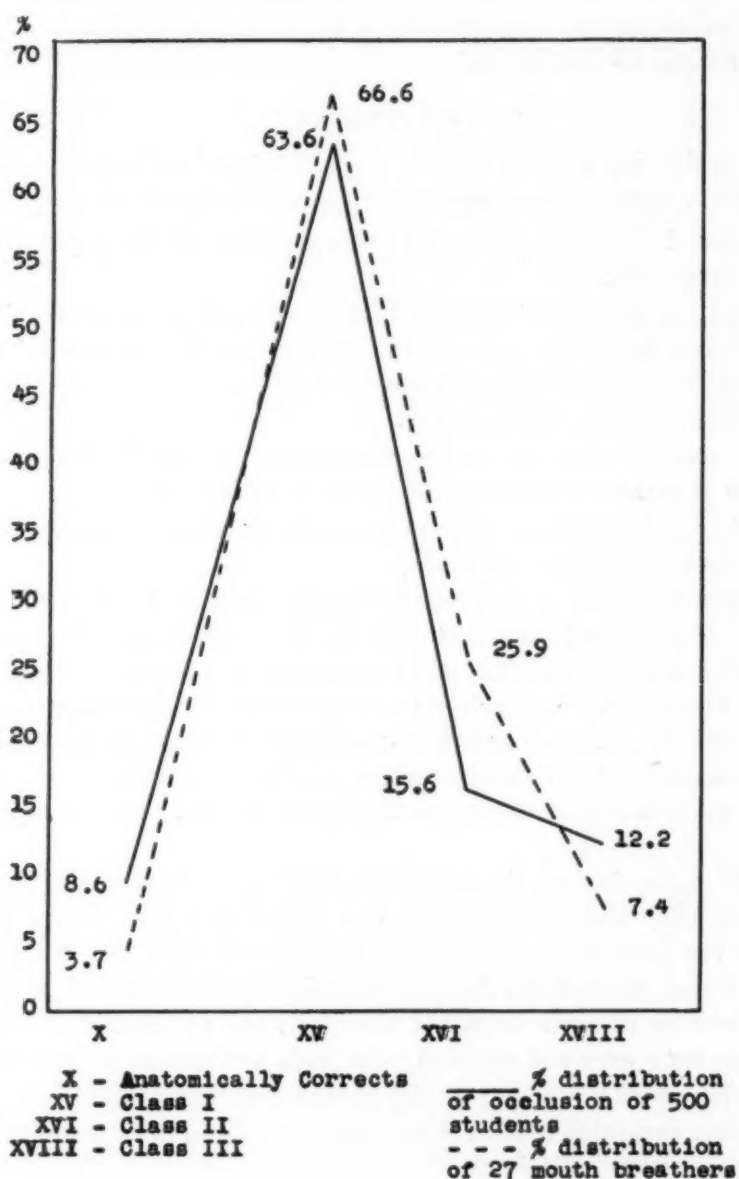


Fig. 26.

XXV. MOUTH BREATHING

Our mouth breathing observation refers only to habits at the present time. They do not consider previous habits. We used a method of direct questioning for our data. Leading questions were asked the students, such as: Do you have

trouble breathing through your nose? Can you breathe through your nose? etc. We found that a large majority of the students have nasal septum trouble. "Deviated septum" was very common with a great many of the students. No record of this number was kept. We found 27 mouth breathers (5.4 per cent). These were distributed as follows (Fig. 26): One anatomically correct; 16, Class I; 8, Class II, and 2, Class III. From this we may conclude mouth breathing is not limited to one particular type of malocclusion; but it is rather well distributed among all dentitions.³

CONCLUSIONS

In conclusion we wish to submit the following brief statements in the attempt to answer questions we proposed under the statement of our problem:

1. We found that 19.4 per cent of this sampling of the population received orthodontic treatment.

2. It was the observers' opinion that 50 per cent of those receiving orthodontic treatment had been successfully treated; 45.7 per cent of the treated students had been improved; and only 4.3 per cent of the treatment results could be characterized as unsuccessful.

3. The average time of active treatment was thirty-two months. The average time of passive (retainer) treatment was fifteen months.

4. In this study 31.2 per cent of the students needed orthodontic treatment at the time the examination was made.

5. What constitutes a malocclusion severe enough to warrant orthodontic treatment? Any malocclusion that disturbs the patient psychologically or interferes with the occlusal function of the individual is severe enough to warrant orthodontic treatment. Our criteria for treatment of the following when they were presented in a degree sufficient to disturb the patient psychologically or interfere with the occlusal function were spacing, crowding, rotation, cross-bite, mesiodistal malrelation of the opposing dental arches, overbite, open-bite, and over-jet.

6. What malocclusions do not warrant orthodontic treatment? The above irregularities when they were present in a sufficiently mild degree that they do not disturb the patient psychologically or interfere with the occlusal function.

7. We found 44 students desiring orthodontic treatment: 5 of these desired treatment because of their impaired function; the remaining 39 wanted treatment because they were not satisfied with their dentofacial appearance.

8. We found 85.1 per cent of the 94 who had terminated their orthodontic treatment were favorable toward their treatment, 12.8 per cent were unfavorable, and 2.1 per cent were indifferent.

9. Of the 500 students examined we found 8.6 per cent (43) presenting anatomically correct occlusions.

10. The frequency ratio of the various classes of malocclusion (Angle) are: 64.6 per cent (318) of the 500 students had Class I malocclusion, 4.8 per cent (24) had Class II, Division 1, 10.8 per cent (54) had Class II, Division 2, 12.2 per cent (61) had Class III.

11. We were able to add nothing to the study of intraoral and extraoral habits. We found, however, that mouth breathing is associated with all dentitions from anatomically correct to the most extreme malocclusion.

12. Seventy-three per cent (365) of the 500 students studied presented some degree of crowding or spacing. Lower crowding predominated over upper crowding, while the opposite held for spacing.

13. Twenty-five per cent (125) of the 500 students had some type of cross-bite or complete buccal or lingual version.

14. The average depth of bite was found to be one-half the length of the clinical crown, with a variance from end-to-end to impingement.

15. Two and eight-tenths per cent (14) of the 500 observed presented some degree of open-bite. Open-bite was found in all classes of malocclusion.

The writers wish to express their sincere appreciation to Dr. George R. Moore for his untiring interest and encouragement in guiding this work, to Dr. Byron Hughes for his aid in setting up the statistical problem, to Dr. Gerald Barrow for his assistance in initiating the problem, to Physical Director Fritz Crisler and the entire staff of the Physical Hardening Program for their cooperation. Without the splendid help we received from those here mentioned plus the assistance of our colleagues in the Orthodontic Department and the cooperation of the School of Dentistry, this study would lack much of its present form.

REFERENCES

1. Dewey M., and Anderson, G.: Practical Orthodontics, St. Louis, 1942, The C. V. Mosby Co., p. 107.
2. Hellman, Milo: Variations in Occlusion, Dental Cosmos, June, 1921.
3. Howard, Clinton C.: Inherent Growth and Influence on Malocclusion, J. Am. Dent. A. 19: 642, 1932.
4. Speech Department of University of Michigan.

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THE EXPANSION BAR APPLIANCE

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MALOCCLUSIONS are divided into three classes, according to the relationship of the mandible to the maxillary bones. This classification does not take into consideration the deformities which may be present within one jaw, but it is understood that those deformities must be corrected before normal jaw relationships can be established.

The deformities occurring within one jaw may present an asymmetrical arrangement of the lateral halves. This asymmetry may be due to unequal lateral development or to uneven forward drift of the buccal segments on the two sides. The correction of unequal lateral development consists of unilateral expansion, while the correction of uneven forward drift is usually accomplished by a distal movement of the teeth on one side. But unilateral expansion and mass distal movement of the teeth are the two most difficult movements we are called upon to perform, and it is very often stated that such tooth movements cannot be brought about by the appliances generally used at the present time. The elastic arches are incapable of performing such movements, therefore another method of correction had to be found. Some fifteen years ago I presented an original appliance for the correction of asymmetries within one jaw. Due to my failure to send the manuscript to the Editor of the Society, my paper was not published. Since that time the appliance was used with success in private practice and at the Orthodontic Clinic of the Hospital for Joint Diseases. The mechanism was briefly described in my paper on the "Modified Edgewise Arch Appliance."* On account of many inquiries, I herewith present a full account of the mechanism in detail. The illustrations used in this article are those used in the original presentation.

In order to understand the principle upon which the action of the Expansion Bar Appliance is based, let us consider two parallel rods (Fig. 1) each fitted with an easily sliding tube. If the two tubes are rigidly connected by a bar, then the bar together with the tubes can be easily moved back and forth in the direction of the long axes of the rods, provided of course that rods are fixed and are stationary. If, on the other hand, the rods form part of a movable system and the bar is fixed, then the rods may be moved back and forth in the tubes.

Let us again assume a similar arrangement in which the rods are inclined at an angle to each other, instead of being parallel (Fig. 2). In this system no motion of the bar is possible when the rods are fixed, even if the tubes slide easily. If, however, one of the rods is made free in such a manner

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that it may move parallel to itself, then it becomes possible to move the bar back and forth. When the bar is moved toward the point of intersection of the rods, the rods separate or expand. When the bar is moved in the opposite direction, the rods move closer to each other or contract.

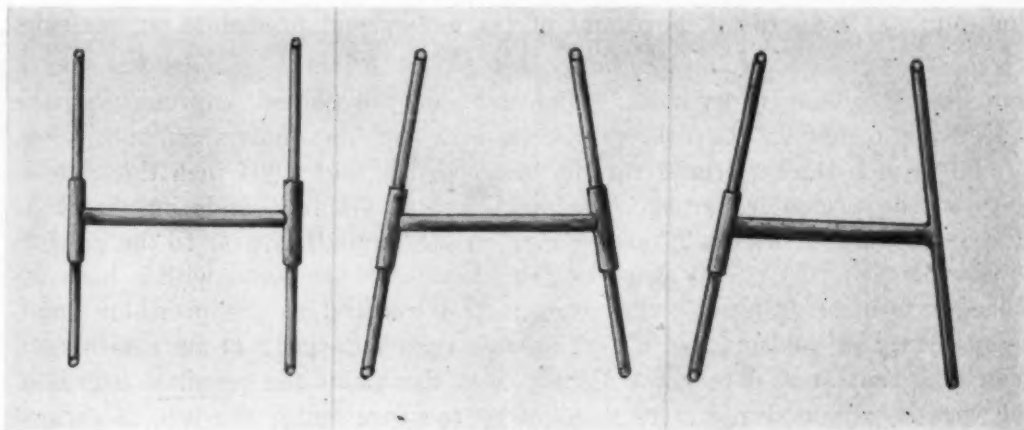


Fig. 1.

Fig. 2.

Fig. 3.



Fig. 4.

Let it be further assumed that under this same arrangement the bar is fixed rigidly to one rod which is not free to move (Fig. 3), while the other rod is free. Here the only possible movement is the back and forth movement of the free rod in the tube. There is no expansion or contraction, just a forward and backward movement.

These principles were utilized in the design of the Expansion Bar Appliance. In the average case, expansion of both the maxillary and mandibular arches is required in the premolar and molar region. If we draw an average

straight line through the buccal cusps of these teeth on both the right and left sides (Fig. 4), we will observe that these lines converge anteriorly; presenting a condition very similar to that depicted by Fig. 2. This is a characteristic condition of the human dentition which makes possible the design and construction of efficient appliances for (1) equal bilateral expansion, (2) unilateral expansion, and (3) mass distal movement of the molars and premolars on one side.

1. *Construction of an Appliance for Equal Bilateral Expansion.*—On a stone model, obtained from a full plaster or hydrocolloid impression, make well-fitting bands on the first premolars and the first molars on both sides. Use 0.006 inch thick material for the molar bands, and 0.004 inch thick material for the premolar bands. The molar and premolar bands on the same side are connected with a 22 gauge wire on the lingual, as near to the gingiva as possible (Fig. 5). Two short 18 gauge tubes are prepared with a hook attached. Then an 18 gauge wire is bent and soldered to the premolar band, using plenty of solder (Fig. 6). The wire runs anteriorly at its attachment, then it is bent around to point distally. At this point the required length of the wire is estimated and after it is cut by the wire cutter the tube is slipped on, with the hook pointing distally. The wire is then bent up to touch the molar band. When the wire is passively adjusted, the entire assembly is removed from the model and the distal end of the wire is attached to the molar band with solder. The wire must be made parallel to the occlusal surfaces of the teeth and should be placed at about the middle of the roots of the posterior teeth. When placed on the model the adjustment of the wire must be such that the tube does not touch the model when moved back and forth. Finally another hook is soldered to the wire opposite the first premolar (Fig. 7). This wire with the sliding tube represents the rod in Fig. 2. A similar rod is constructed on the other side of the model. To complete the appliance the tubes are placed in the farthest posterior position on the rods and then are rigidly connected with a 17 gauge wire, which will act as the bar (Fig. 8). The bar must be so adjusted that, in any position which it is likely to take during treatment, it will clear the soft tissues. Care must also be taken not to bend the portion of the (rod) wire on which the tube is to slide. After the appliance is cemented in the mouth, its operation is simple. The treatment consists of changing the elastics on the two sides stretched between the anterior hook on the rod and the posterior hook on the tube.

The action of the appliance can now be easily understood. The elastics pull the bar forward. On account of the rigidity of the appliance, however, the bar cannot move forward. It is held back by the reaction of the tubes to the resistance of the rods, which is perpendicular to the axis of the rods. This reaction present on both sides may be resolved into two components, one component parallel to the rod and the other parallel to the bar. The component parallel to the rod is equal in intensity to the pull of the elastics and becomes the effective force pulling the bar forward. The component parallel to the bar represents a lateral thrust which brings about the expansion of the arches.

When the appliance is constructed, its range of action may be limited by

placing appropriate stops on the rods. The operating mechanism does not come in contact with the teeth or the soft tissues and it is extremely simple to keep clean. It is a substantial appliance and does not get out of order easily. The patient may be allowed to go without attention for several months.

Fig. 5.

Fig. 6.

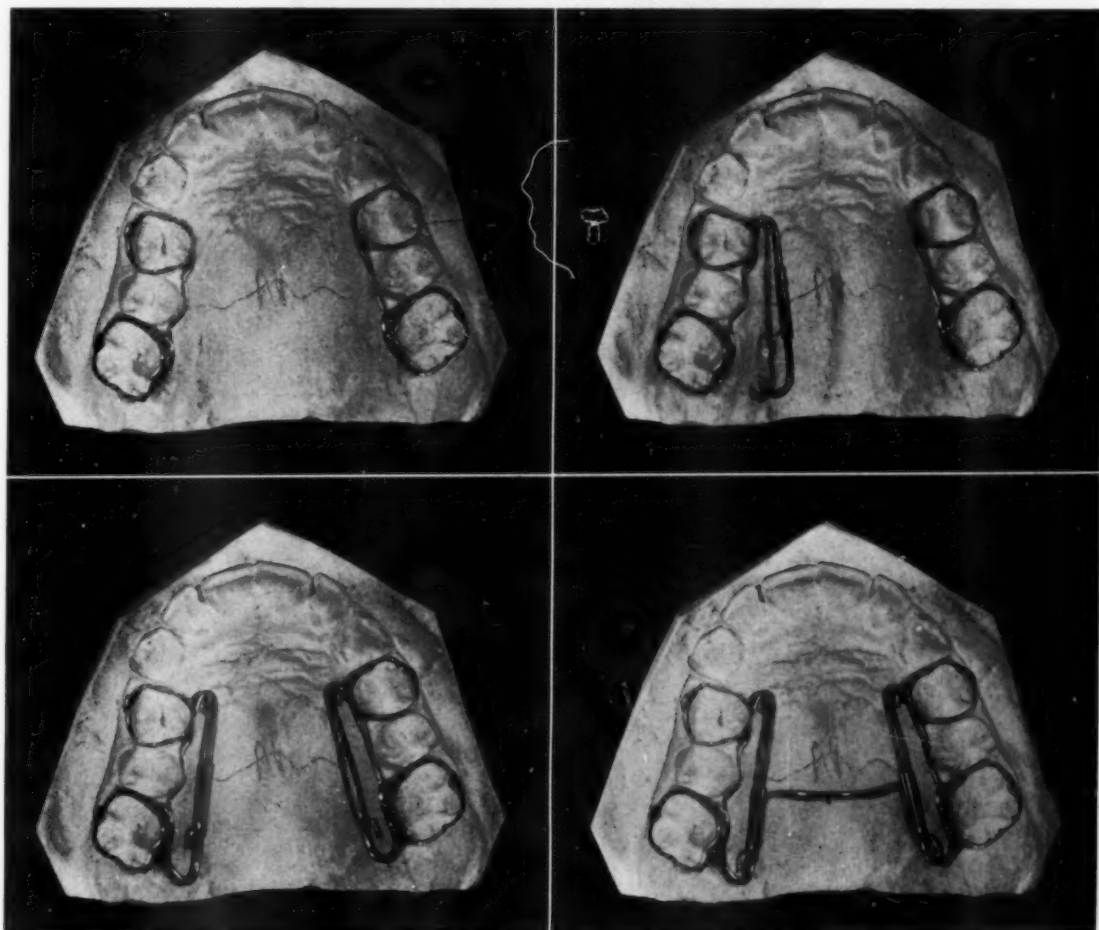


Fig. 7.

Fig. 8.

An important feature of this method of expanding arches is that the teeth move bodily. The premolars and molars are not tilted buccally as is the case with most of our appliances. The expanding force is applied to the bar at the level of the middle of the roots of the posterior teeth. This principle was utilized by Dr. Calvin Case for the bodily movement of teeth.

2. *Construction of an Appliance for Unilateral Expansion.*—Equal bilateral expansion is the simplest expansion we are called upon to perform, while unilateral expansion is the most difficult. With the Expansion Bar Appliance, unilateral expansion becomes just as simple as equal bilateral, by the addition of a wire lingual to the anterior teeth (Fig. 9). This wire is bent to touch the anterior teeth. One end of it is soldered to the premolar band

on the side which is to remain in position, and the other end is attached to a band on the opposite canine or lateral. This apparently simple addition provides sufficient anchorage for unilateral expansion (Fig. 9).

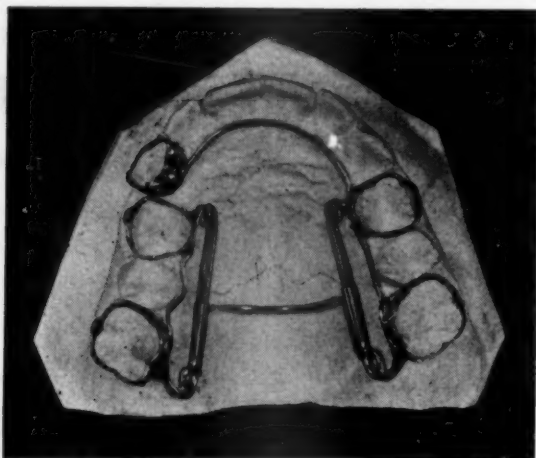


Fig. 9.

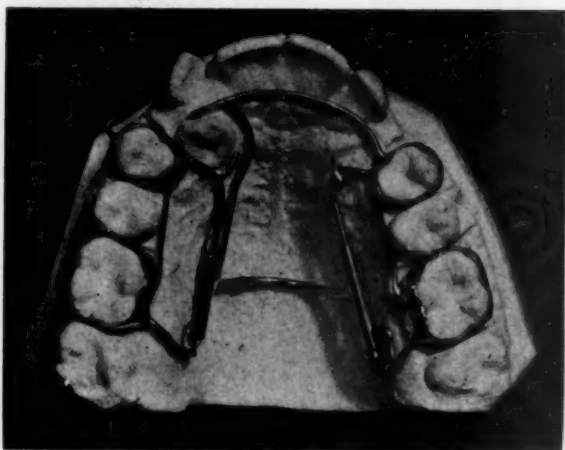


Fig. 10.

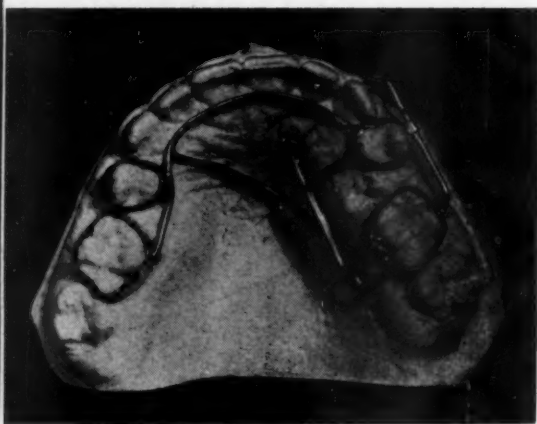


Fig. 11.

3. *Construction of an Appliance for Mass Distal Movement.*—For the mass distal movement of the teeth on one side, the appliance is constructed exactly the same way as for unilateral expansion, with the exception that on the side which is to remain stationary the distal end of the tube is attached to the bar by means of a small loop of 22 gauge wire (Fig. 10). The purpose of this is to fix the tube on the stationary side. In addition to this an additional wire is carried from the canine band on the side to be moved to the premolar band on the stationary side. This is further reinforced by another wire, which is soldered to the bar near the tube on the moving side, and to the anterior wire near the canine band. The tube on the stationary side may be entirely eliminated and the bar may be soldered directly to the rod. The elastic is worn

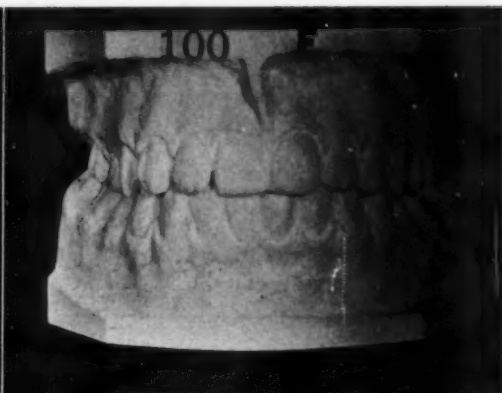
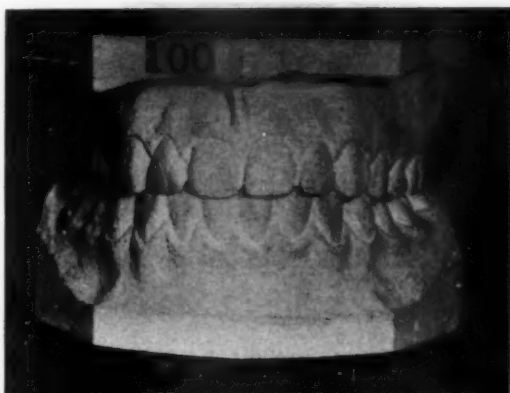


Fig. 12.

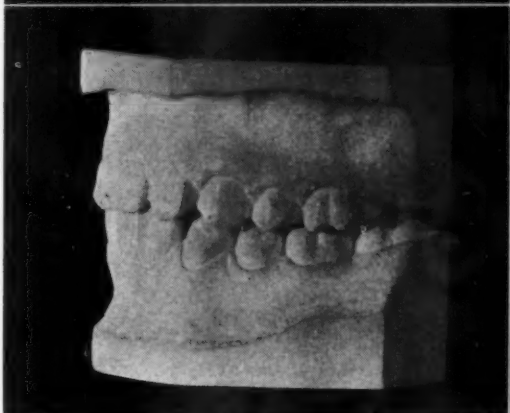


Fig. 13.



Fig. 14.



Fig. 15.

Fig. 16.

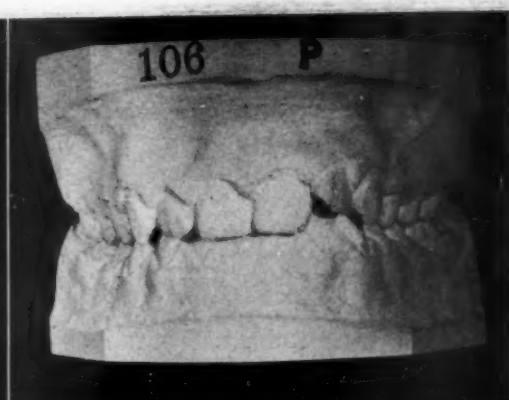
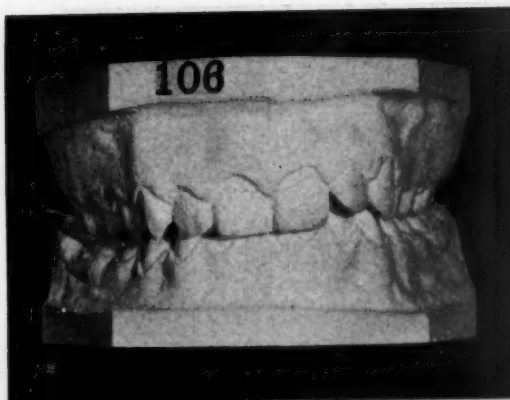


Fig. 17.

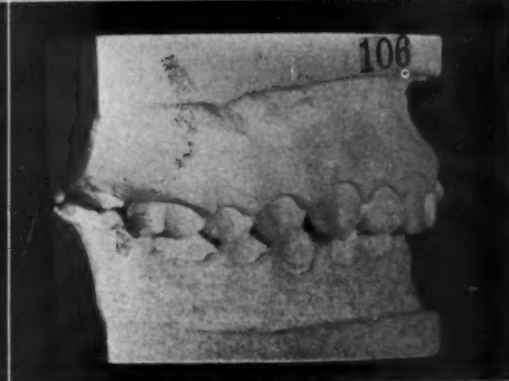
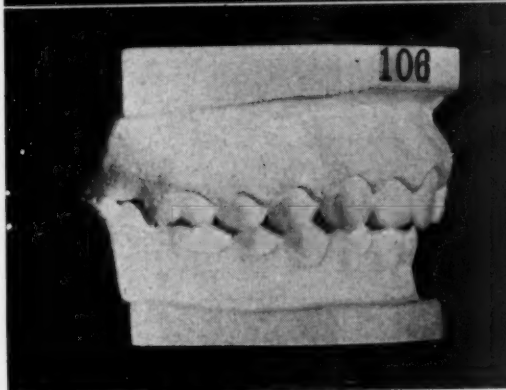


Fig. 18.

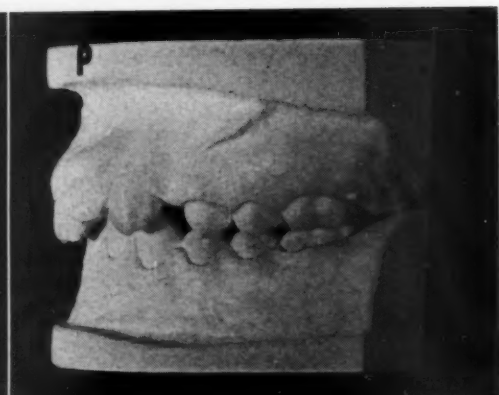
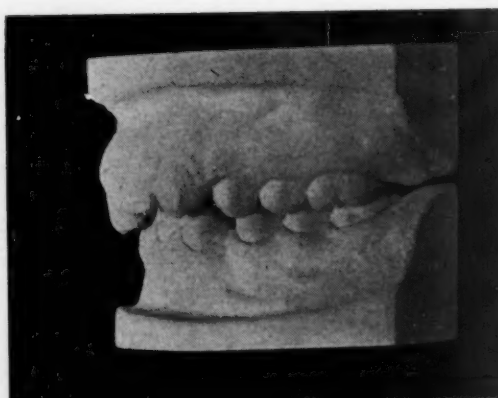


Fig. 19.



only on one side, which may be re-enforced by an intermaxillary elastic from the buccal hook on the premolar band to the mandibular first molar.

In this particular arrangement the action of the appliance is different from that in the previous instances. On account of the fixation of the bar there is no lateral pressure and the full force of the elastic is directed distally. Fig. 11 shows an appliance designed for the distal movement of a molar tooth. It still remains to be explained how a combination of distal movement and unilateral expansion may be brought by this appliance. In such instances the bar is not soldered to the rod on the stationary side, but a tube is used as explained above, with its distal end attached to the rod by a small piece of 22 gauge wire. After the required distal movement is accomplished, this small wire is cut by a knife-edge stone, and the wire running from the canine band to the bar is removed. This will change the distal movement arrangement to that of unilateral expansion. From this point on elastics on both sides must be used.

The effectiveness of the appliance may be seen from the following case reports:

CASE 1.—This the case of a girl, 12 years of age. The upper appliance was placed in the mouth on Feb. 16, 1929, and was removed in the last week in May, thus making the active treatment slightly over three months. Fig. 12 shows front views of the original and completed cases. Fig. 13 is the left lateral view showing improvement in jaw relationship after treatment. Fig. 14 displays the buccolingual correction of the posterior teeth on the right side as a result of unilateral expansion. Fig. 15 shows more clearly what has been accomplished by the appliance.

CASE 2.—As in the previous case, the left photograph shows the original, and the right the progress case. Fig. 16 is the front view, which shows no change in the position of the anterior teeth during treatment. Fig. 17 is the right lateral view, in which the original position of the teeth and the jaw relationship is retained. Fig. 18 is the left lateral view, in which a decided distal movement of the two premolars and the first molar is shown. It must be noted that there has been no change in jaw relationship, and that the teeth which were moved distally were not tipped but moved bodily together as a unit. Fig. 19 is the occlusal view indicating the effectiveness of the appliance to bring about mass distal movement. Here it must be pointed out that the space obtained is wider than necessary, because it was realized that the first molar and the two premolars would have to be used to bring the canine distally, and a mesial drift of these teeth during this operation was anticipated.

In conclusion, I wish to state that this appliance is better adapted for the movement of the upper teeth. It has been used on mandibular arches but with limited success.

INVESTIGATIONS OF NEUROPATHOLOGIC MANIFESTATIONS OF ORAL TISSUES

I. A PRELIMINARY REPORT

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THE discovery of somatogenic changes due to emotional reactions is not recent; in fact, this phenomenon has been observed for generations. The importance of psychic disturbances as an underlying cause of many apparently organic diseases, however, has received special attention in recent years, and at present the medical literature abounds with reports of changes observed in tissue structures for which no organic cause can be established but which often respond to psychotherapy.

All matter of the universe is in a constant state of change, and changes, structurally speaking, are due to forces which tend to bring about a certain equilibrium of one type of matter with the other. The relationship between animal and vegetable life is an illustration of such a complementary balance. In studying the human organism we are cognizant of continued cellular and tissue activity, traceable to forces which tend to maintain a normal function, producing the greatest degree of energy and the least degree of friction. Tissue metabolism, for instance, is an example of equilibrium in intracellular activity. Metabolism, generally speaking, may be considered as a normal state of synchronization in which physical and chemical processes, under normal conditions, create substance and energy in tissues in a balance best conducive to health, and it accounts for the complete and adequate utilization of the simple and complex molecular chemical elements found in intake substances such as food, water, and air, as well as radiation synthesis. In fact, the cycle of its elements must be available and acceptable to the tissue cells for metabolism to occur, if physiologic function is to remain normal. If the normal metabolic balance is disturbed, the change results either in catabolism, a destructive type of metamorphosis, or anabolism, which effects increased cellular activity and tissue repair, and an excess of these processes may lead to hyperstimulation of certain cellular elements and subsequent dysfunction.

All body tissues are specialized, each having its part to play in the scheme of life and each interdepending upon the other for nutrition and stimulation. Thus, the process of cell life and continued activity is based on these functions, as well as on the depression of these functions. It is a well-established fact

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†Resident Dental Surgeon, Napa State Hospital, Imola, Calif.

that a shift in these phenomena of normal cell activity, of whatever degree and intensity, and from whatever cause, can bring about changes in normal function of tissue structure which will often manifest themselves in areas far remote from their point of origin as, for instance, in the oral cavity. However, that psychic factors also seem to influence oral structures has, to our knowledge, not yet been given much cognizance and some investigations made along this line will be the topic of this article.

Dental science, based on thorough research work, has made great progress. Histologists have minutely illustrated the normal tissue elements of both the hard and soft structures of the oral cavity. Bacteriologists have investigated microbiosis as cause of pathologic tissue changes. Physiologists have pointed out the phenomena of related metabolic activity, and pathologists have classified the processes of those conditions which we know as disease. Dental science in the past has done much to improve tooth-restorative materials, denture substances, and artificial teeth, as well as related techniques and chemotherapeutic measures as they apply best to the oral structures. We recognize symptoms as they become manifest through pain and discomfort, and, in most instances, habit has prompted us to regard them as being of a bacterial, or mechanical, or dietary nature. It is true that some types of bacterial flora cause pain and produce lesions in both hard and soft tissue structures; it is fully realized that malnutrition is responsible for some of the pathologic changes taking place in oral structures; and the importance of the vascular system, with its response to physical and chemical stimuli and depressors, is well known. It is the neurovascular system with which we are especially concerned here.

Let us consider the capillary system of the body, together with the larger vessels contributing to the network of arteries. The importance of the capillary system in carrying nutritive elements to all structures is known. The larger vessels have, as components of their walls, several structural layers, among which are two systems of muscle fibers, one running longitudinally and the other transversely to the long axis of the vessel. These muscular coats have the property of expanding and contracting under certain stimuli, a process known as vasodilatation and vasoconstriction. Chemically, epinephrine may cause vasoconstriction when procaine solutions are injected. Other luminal changes are produced by physical agents such as heat and cold. Electric shock will produce similar reactions. These changes, of course, are instigated through the nervous system with its afferent and efferent nerve tracts which are directed to and from the central nervous system to all parts of the body. Capillary wall tension depends upon physiologic reaction within the vasomotor centers of the brain and spinal cord and is regulated by the autonomic function of the central nervous system. This system is not entirely automatic but can be influenced by psychic and emotional syndromes. For example, some types of dementia praecox may be mentioned in which the surface capillaries are functionally disturbed, resulting in a characteristic cyanotic appearance of the skin accompanied by cold hands and feet.¹ Psychic excitement also causes flushed appearance of the skin, as well as stimulation of the sudoriferous glands and other phenomena. It has been proved that certain individuals can mentally concentrate upon their heart action

and change its rate at will. Obviously if such a process were continued consciously or unconsciously over a long period of time, the finely adjusted oxygen requirement to the nerve tissue and brain cells would suffer, very probably on the basis of heart dyscrasia.

We have enumerated a few of the causes of vascular and other tissue changes, but there is one which heretofore has been given little cognizance as far as oral structures are concerned, namely, the emotional status of a patient and the changes in the neurovascular system, together with ensuing tissue reactions which take place in the presence of emotional stress. We come to realize more and more that the oral tissues are but part of, and form a continuity with, the greater system which composes the body tissues as a whole, and that stimulation and depression, which influence the activity of tissue cells, may be brought about also indirectly by various factors, among which emotional problems seem to play a decisive role. For example, one may be depressed and have gastrointestinal symptoms; similar symptoms may also occur because of a nervous shock to the system, such as seeing an accident or learning of some adverse happening. Also, if one has to work in unfavorable surroundings over a period of time, exposed to constant stress and worry, it has been found that such a condition can produce irreversible vascular changes which are detrimental to health.

For a period covering more than a year we have studied oral pathologic changes in patients at the Napa State Hospital, Imola, California, an institute for neuropsychiatric diseases. Here, as well as over a longer period of office practice, we have observed a marked prevalence of inflammatory conditions of the gingival tissues in patients suffering from nervous disorders or in those contending with emotional problems. At times, also, pain was present which could not be explained on an organic basis. Many cases—in excess of the percentage ordinarily observed—displayed evidence of marked edema, and others pyorrheal lesions and bleeding gums. Examination of case histories and records of previous years at the institution revealed that such cases were diagnosed in the past either as Vincent's disease or periodontal disturbances and were treated as such. However, in spite of careful treatment, including chemotherapeutic measures and instrumentation, the majority of these cases failed to respond satisfactorily. On the other hand, some patients with evidences of bleeding gums and Vincent's infection, even though not treated, recovered completely. It may be well to mention here that dietary regulations are extremely well handled at this institution and special care is devoted to well-balanced meals; patients who are unwilling or unable to attend to a proper food intake are fed artificially. Also, the maintenance of oral hygiene and dental prophylaxis is on a high level.

An interesting feature is the observation that patients who are permanently in a state of psychosis in which they are no longer emotionally disturbed and do not have to contend with emotional cyclic changes, or those whose condition has improved after treatment, present a minimum of oral symptoms. On the other hand, patients whose periodontal disturbances have been corrected often show a remittance of their symptoms following the development of psychic tension,

and these symptoms tend to disappear again after the mental affect has completed its cycle or has yielded to therapeutic measures.

It is our impression, supported by clinical observations and laboratory work, that the high percentage of pathologic oral manifestations seen in mental patients is not always primarily due to intraoral bacterial flora, but that the conditions found present the sequelae of psychogenic disturbances which, in turn, act upon the neurovascular system, and that the bacterial flora is not the cause but rather the result of retrogressive structural reaction to bacterial invasion which tends to reduce the resistance within the tissues. As the neurovascular system reaches even within the dental pulp as well as periodontal structures and gingivae, it can be assumed that the finer capillary vessels which have no muscle coats but merely a layer of endothelial cells can become damaged, at times irreparably, under the stress of continued emotional disturbances. Photomicrographic studies of such tissue damage are now in progress and their results will be published in subsequent papers.

At present we have a large number of patients under our observation. Each has undergone the usual thorough general physical examination including roentgenographic as well as psychiatric studies. Careful records are being kept of the oral bacteriologic flora and of any changes in the salivary pH. The usual dental examination is recorded as to caries, condition of the gums, and intraoral tissue changes, if present. Special studies are being undertaken regarding avitaminosis as a contributory cause in periodontal lesions. We find that some oral manifestations are directly traceable to vitamin deficiency alone. These oral symptoms are very similar to the ones observed in patients with psychogenic disturbances, with the exception of aggravated cases, where the patient enters the hospital presenting true pictures of cheilosis, or red-bordered tongues, and corneal injection and hemorrhages, showing nicotinic acid and other deficiencies. Such patients do well under routine vitamin administration, which aids in establishing normal metabolism; they are kept under observation and additional fractions are given in varying doses, as indicated. The regular biologic and chemotherapy is continued at present in the usual manner as it aids in a prompter correction of oral lesions, and the routine prophylactic procedure is still followed in all cases under investigation. However, medication may have to undergo some changes as and when indicated by psychiatric findings. For example, not every case in which local procaine anesthesia is employed should be premedicated with a barbiturate; in fact only those in a hypertonic state. In these selected cases such medication is very beneficial, whereas to prescribe the same procedure for all would only be time-consuming and unnecessary from the patient's viewpoint. It is obvious that the emotional background of patients will establish itself more and more as a guide to the wise application and dosage of drugs.

It is our intention to publish, in the future, articles with graphs for certain patients, illustrating the changes in emotional balance, as well as those in the condition of their oral tissues, caries, bleeding gums, general health, diet, etc.

The greater part of this work is carried out at the Napa State Hospital with the aid and assistance of both Dr. Theo. K. Miller, Superintendent, and Dr. Chas. C. Caulkins, Assistant Superintendent, who contribute much time

and effort to further the research work in the field of neuropathologic investigation. Fortunately, well-organized laboratories within the hospital grounds facilitate bacterial determinations under exacting conditions, as well as other tests such as biopsy studies of gingival structures in which luminal capillary changes can be observed during periods of cyclic emotional stress.

The results of this work, with its implication of possible changes in chemotherapy, will be available for teaching purposes at the University of California College of Dentistry where senior students are given lectures in psychiatry as it is related to dentistry.

COMMENT

Research work is in progress to ascertain the etiology of bleeding gums, pyorrhetic disturbances, capillary alterations, as well as of periodic and spasmodic pains in the jaws of emotionally disturbed patients, which have no apparent pathologic basis and which may be of psychosomatic origin.

At present, biopsy studies of such patients are conducted and will be reported for the purpose of demonstrating structural reticular changes in any intraoral tissues showing other than normal appearance. At the same time, microscopic comparative studies are made of the capillary vascular system which is a component of the gingivae and of the dental pulp, in order to determine the degree and nature of the changes taking place in the capillary walls and surrounding tissues. Similar studies will be made of the neural structures.

Comparative studies are under way and will be reported, illustrated by graphs, which will show the progressive rise and fall of the patient's emotional phenomena, his general health, his food intake, neurosymptoms of psychosomatic origin, salivary pH, oral bacterial flora, caries of the teeth, and bleeding gums. At the same time food intake studies are made which will be evaluated as to the amount of solids and liquids consumed by the patient, their nature, mineral and vitamin values, etc.

The possibility of an alteration in biologic and chemotherapeutic measures based on the result of this research is being evaluated.

REFERENCE

1. Cobb, Stanley: Foundations of Neuropsychiatry, Baltimore, 1944, Williams & Wilkins Co., Chap. 1.

Communication

FURTHER PHASES ON THE JOURNALISTIC FRONT

THOSE charged with the responsibility of publishing the proceedings of the American Association of Orthodontists have patiently tolerated the continued misrepresentations that have been created over a period of years by the propaganda Committee on Journalism of the American College of Dentists, until it has become insufferable.

One of the Associate Editors of this JOURNAL, Dr. James D. McCoy of Los Angeles, California, has contributed much, over a period of years, to both the JOURNAL and to orthodontics. He wrote a reply to the reprint which was sent to all of the members of the American Dental Association by the American College of Dentists. This reply was published in the August issue of the AMERICAN JOURNAL OF ORTHODONTICS AND ORAL SURGERY.

Dr. McCoy's letter and, also, the editorial written by Dr. Kurt Thoma attracted wide attention. Plainly, this is a result of the misrepresentation made by the committee referred to in reference to the relations of the American Association of Orthodontists and the AMERICAN JOURNAL OF ORTHODONTICS AND ORAL SURGERY.

In a subsequent letter to the chairman of the propaganda committee, Dr. McCoy pointed out some further pertinent facts in regard to this matter that will be of interest, particularly to the members of the American Association of Orthodontists and to its component organizations. The letter follows.—*Editor.*

August 28, 1945.

Dr. J. Cannon Black, Chairman,
The Committee on Journalism of
The American College of Dentists,
55 East Washington Street,
Chicago 2, Illinois.

Dear Dr. Black:

Your letter of July 14, 1945, in reply to my "open letter" to Dr. Brandhorst, has been carefully read. If it was your intention to offer a defense or justification for the most recent report of the Committee on Journalism of the American College of Dentists, you have failed dismally, just as you did in your effort to render a report on dental journalism in the United States which could be considered accurate and constructive. What you have done very effectively, however, is to create a state of alienation and antagonism between the members of the American Association of Orthodontists and the American College of Dentists, which may never be healed.

Your committee doubtlessly was within its rights to get out a report and publish it in the *Journal of the American College of Dentists*. What they did not have a right to do was to misrepresent the position of the American Association of Orthodontists, and then use the stencils of the American Dental Association to mail reprints to all its members for propaganda purposes. Many such are wondering why these stencils were made available to a private dental organization, and who shouldered the large expense necessary to this move.

Had your report been entirely truthful, or had it been worded in a way so that it could be considered in the light of constructive criticism, no one would have taken offense. It did not possess these attributes, however, was lamentably lacking in discrimination, did not even approach an elemental classification of dental journals, and in parts was malicious. Coming from representatives of an organization which prides itself upon its ethical concepts, these shortcomings are proving embarrassing to many members of the College.

If you should tell me that all members of your committee collaborated in the report, I would, of course, have to believe you. It would be a disappointment to me, however, to have to admit that five men could be found whose sense of perspective have become so distorted.

Your discussion of our contract with the C. V. Mosby Company which gave us the professional control of the *American Journal of Orthodontics and Oral Surgery* is both humorous and naive. You quibble over the fact that the actual number of the "Editorial Board" is not named in the contract. It should be obvious to you or anyone thinking the problem through, that since one such representative is elected by each sectional society, as time goes on and population quotas change, this number likewise would change as new sectional societies come into existence. You also object to the provision that such men must be acceptable to the publishers and express the fear that in time they (the publishers) will or may control the selection of Board members. The record through the years shows that our elected representatives have always been acceptable to the C. V. Mosby Company. The value of a contract is usually judged by the way it works and since we have operated now under ours for more than five years, it might be considered satisfactory except by those who have an itch for criticism.

Your objection to the fact that the "Editor-in-Chief" is selected jointly by the C. V. Mosby Company and the Editorial Board, from among the members of the American Association of Orthodontists, is utterly childlike in its lack of logic. Naturally, both parties are interested, and both share the responsibility for the continued success of the Journal and as intelligent and cooperative human beings this necessity, when it arises, can be met without difficulty. Your reference to the matter of the salary of the Editor-in-Chief, which is negotiated personally between the Publishers and the Editor, and which, according to your statement, "makes the editor of the publication the servant of his commercial employees, and responsible to them for the financial returns of the periodical," places you in a position to write for the funny papers when the real facts are surveyed. You must have known that such positions, and in fact, all editorial positions on our Journal would be considered as being occupied at a personal loss if it were not for the infinite satisfaction which comes to professional men who strive to do something constructive in their field of endeavor. Your comments show you have only a superficial knowledge of such arrangements.

In reference to the rights and interests of a publisher, it is worth recalling that they take financial risks and, therefore, have a right to protection. We hope they make money, just as some of us in the practice of dentistry hope to end each year without being in the red. As a matter of fact, we like to have enough to pay our income taxes and lay something away to protect us when we can no longer stand up under the arduous demands of daily practice. Most of us take pride in our profession and we like to make a living by it. Certainly no one holds this against us. We develop moral and ethical concepts which we believe are for the best interests of our patients and, incidentally, do us no harm. Publishers, likewise, take pride in the publication business which can reach such a degree of excellence that such organizations may be regarded not only as "business," but as contributing to the field of education. Our experience with the C. V. Mosby Company makes us feel that they deserve this latter classification.

It is interesting to recall that, years prior to the professional control memorialized by contract, the moral control of our Journal had always been complete. No wish expressed by our officers or publication committees was ever denied. This even included changing the name of our publication, which for nearly two decades had been published under the title "International Journal of Orthodontia," to the "American Journal of Orthodontics and Oral Surgery." Other matters of policy, including the nature of advertising material to be accepted, were altered at our suggestion and a financial arrangement helpful to our membership was gradually evolved, and finally recorded by contract. It is unfortunate that your committee did not follow Al Smith's advice and "Look at the record."

The lack of discrimination of your committee which, as I have stated before, showed no classifying abilities, was made evident when only three magazines were mentioned, *Oral Hygiene*, *Dental Survey*, and the *American Journal of Orthodontics and Oral Surgery*. The first two are sent free to the entire dental profession. The latter carries a subscription price of \$8.50 per year in the United States. We have all read the "free magazines" and have received entertainment and help from them. Certainly their influence has had no degrading effect or has it caused us to adopt questionable ethical standards.

One is led to wonder why you limited your attack to three magazines, and failed to include such other helpful publications as *Dental Radiography and Photography*, published by the Eastman Kodak Company in the interest of the dental profession; *Tic*, published by Ticonium of New York, and carrying much information which is helpful; *Dental Items of Interest*, also published in New York, and others. Since your committee is frequently referred to as "The Commission on Journalism of the American College of Dentists," one is led to wonder why it has not justified its existence by producing a *classification of journals based upon their usefulness to the dental profession*. A "Gallup Poll" plan along this line might prove revealing.

Your reference to the method whereby our contract with the C. V. Mosby Company became final is humorous. In quoting our Editor-in-Chief as stating, "This contract was approved by the Board of Directors of the American Association of Orthodontists after a specially appointed committee had given the plan much thought and study," and my statement, "The whole matter was submitted at an open meeting of the American Association of Orthodontists and after an intelligent discussion was approved without a dissenting vote." It would never occur to anyone possessing a mind like yours that in the natural course of things *all of these events took place*.

Your denial that the committee's report was without malicious intent also fails to be convincing especially when one reviews your reference to the increased number of articles in our oral surgery division, and the injected thought that this was to compete with the new *Journal of Oral Surgery*, published under the sponsorship of the American Dental Association. Now anyone who knows Dr. Thoma and the vast amount of material which is made available to him would not take this slur seriously, but for your propaganda purposes you doubtlessly considered it advantageous.

Your assertion that there is a lack of professional control by the American Association of Orthodontists over the *American Journal of Orthodontics and Oral Surgery* must be considered a personal viewpoint on your part, which to a person like yourself, possessed with a colossal degree of self-complacency, cannot be altered. We are hoping, however, that eventually you will readjust your mental monocle in such a manner so that you can see things objectively and perhaps learn to live in the world of today. It is also hoped that you and your associates will refresh your minds with a review of "the principles of ethics" which, in brief, only means fair play.

Fraternally your,

(Signed) JAMES D. MCCOY, D.D.S., F.A.C.D.



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There may be members in the Service whose names do not appear in the above list. These members should notify the secretary at once so that their names may be included.

Max E. Ernst, Secretary, American Association of Orthodontists, 1250 Lowry Medical Arts Bldg., St. Paul, Minn.

In Memoriam

ARCHIE C. GIFFORD

Archie C. Gifford, one of the pioneer orthodontists of the state of Wisconsin, passed away on Oct. 12, 1945, in his home town of Oshkosh, Wisconsin.

Dr. Gifford had practiced combined oral surgery and orthodontics in Oshkosh for a number of years until June 29 of this year, when he was taken ill.

The son of Mr. and Mrs. Frank Gifford, he was born June 26, 1884, at Edgerton, Wisconsin.

A graduate of Marquette University, Dr. Gifford practiced dentistry in Oshkosh for a number of years before taking a course in orthodontics at Kansas City, Kansas. He returned to Oshkosh upon completion of that course and limited his practice to oral surgery and orthodontics until the time of his illness.

Dr. Gifford was a member of Winnebago County Dental Society, a former director of the Oshkosh Chamber of Commerce, and a past president of the Fox Valley Dental Society. He was also president of a service club, and was connected with various lodges and civic enterprises.

A dog fancier of some fame in the midwest, Dr. Gifford raised springer spaniels and won a number of prizes with his dogs. He was also an ardent sportsman as long as his health would permit.

Dr. Gifford was devoted to the specialty of orthodontics. For many years he has been a regular attendant at the annual meeting of the American Association of Orthodontists, and at local meetings devoted to the advance of the specialty.

Dr. Gifford, who started practicing orthodontics as a specialty when there was only a handful of specialists in the country, will be missed greatly by his colleagues and confreres who will remember for many years his devotion and enthusiasm.

Department of Orthodontic Abstracts and Reviews

Edited by

DR. J. A. SALZMANN, NEW YORK CITY

All communications concerning further information about abstracted material and the acceptance of articles or books for consideration in this department should be addressed to Dr. J. A. Salzmann, 654 Madison Avenue, New York City

Man Against Pain: The Epic of Anesthesia. By Howard Riley Raper, D.D.S. Illustrated. Pp. 315. Price \$3.50. New York, Prentice-Hall Inc., 1945.

Raper in dentistry is a name which has long been associated with the Raper bite-wing roentgenograms in particular and with dental radiology in general. The dental profession now has an excellent reason to feel proud of this man's literary product as of his scientific contributions. *The Saturday Review of Literature*, the publication of the *cognoscenti* in belles-lettres, says the following in reviewing Raper's book:

"This is IT: the most exciting book about medicine, for the non-medical reader, since Paul de Kruif hit the jackpot twenty years ago. . . . Anyone above the age of ten who gets beyond Dr. Raper's first sentence will, despite the volume's topic, spend a sleepless night under the bedlamp. For here is the story of the bitterest of controversies told with the skill of an Eric Ambler; a detective mystery come to life to shame all our artisans of detective fiction.

"Dr. Raper writes like a dream . . . one cannot come away from his pages without borrowing the terminology of anesthesia . . . he writes with humor and love for his subject, with humility and with rare skill as a historian."

Raper introduces his "Epic of Anesthesia" with a series of illustrations in which are reproductions of famous paintings, caricatures, and photographs, all dealing with the discovery, development, and use of anesthetics. The captions and explanatory text in this section present a brief but highly significant and interesting review of the subject. Part of the book, "Background," gives an interesting account of the early attempts to make surgical operations painless. It is written on the same high literary plane as the rest of the book, in which we read about the discovery of anesthesia, the conflict which followed among the discoverers and their respective adherents and opponents, and the "Story of Progress" which anesthesia has achieved in the past century.

Critical reviews are presented of the books on the discovery of anesthesia and a significant and complete bibliography is included which should make the task of the student and research worker infinitely easier. This book is not content with merely presenting the case of ether and nitrous oxide but includes also accounts of the discovery of local anesthetics and the newest general anesthetics.

One should buy this book first of all for himself because it is a classic, highly entertaining, and instructive work. It is a book one should buy as a gift for young friends in medical and dental school, physician friends, and anyone else who appreciates good writing, the suspense of the detective novel, historical adventure stories, or plain facts presented in a most attractive form by an expert.

This reviewer could go on and on in his laudatory description of the book. The best advice he can give the reader is to lose no time in obtaining a copy. After merely glancing at the pictures, no one could lay the book down until he has read it from cover to cover.

Bite and Dental Injury: By Francesco Ronchese, M.D., Providence, R. I., J. A. M. A. 127: 1050, April 21, 1945.

A distinction, it seems to me, should be made between a bite and a dental injury, either a self-inflicted bite or a bite by another person.

Recently, a clinical note appeared in the *Journal of the American Medical Association* reporting a case of actinomycosis secondary to a "human bite." While playing volleyball "the patient sustained the human bite wound. He struck his elbow against another man's front teeth." Hitting any part of one's body against somebody's teeth and sustaining an injury should not be called a bite. Barnes and Bibby report a case of knuckle wound incurred by striking a tooth in a fight and it is correctly called a "human tooth wound." Boland says that, "strictly speaking, trauma to the clinched fist is not an actual bite." Boyce entitles his paper "Human Bites," but in the text makes a distinction between true bites and tooth wounds.

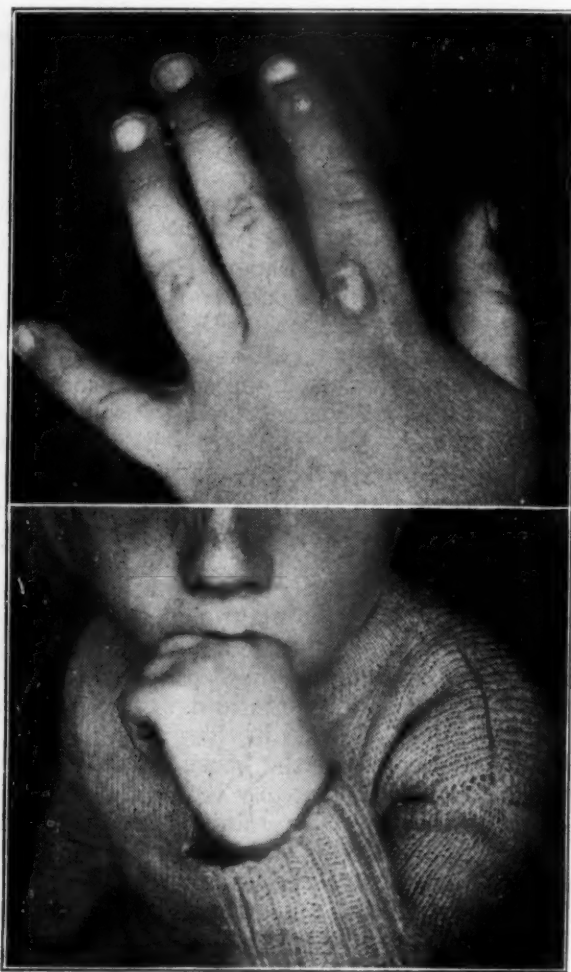


Fig. 1.

Fig. 1 shows a conspicuous warty lesion at the proximal end of the left index finger and a smaller one at the distal phalanx of the same finger due to pressure of that area against the teeth while finger-sucking. The habit is so strong that the child will not fall asleep unless with his index finger all the way in the mouth. It is similar in appearance and consistency to the lesions due to

the actual chewing of the skin. Both are calluses from repeated dental trauma over a long period, but only one (Fig. 2) can be called a bite, like the finger- and toe-biting (Fig. 3).



Fig. 2.

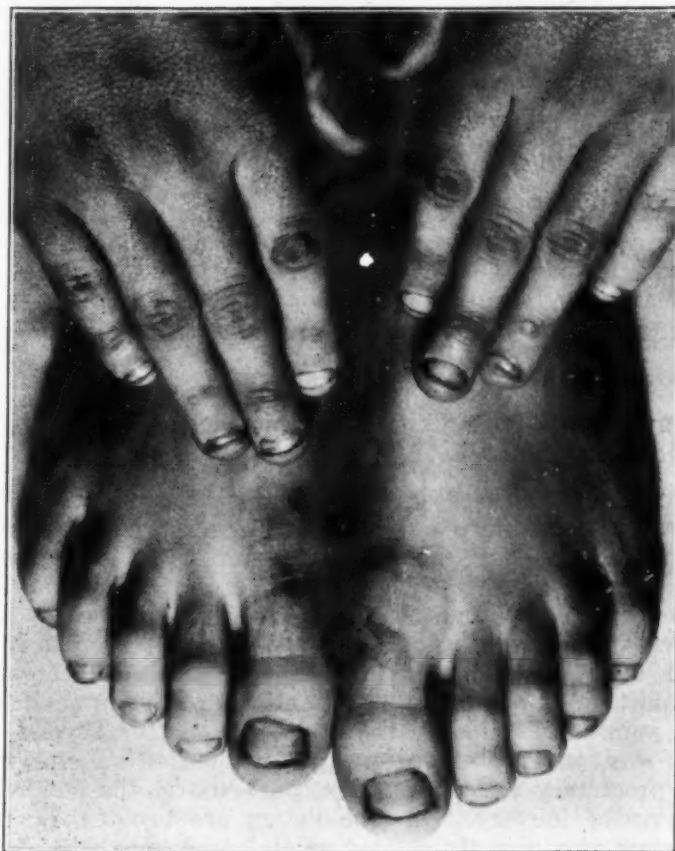


Fig. 3.

The lesions as illustrated in Figs. 1 and 2 are far from rare. Surprisingly enough, they are often not diagnosed or they are diagnosed as a wart, a keloid, a sarcoid, a mycotic growth, or an epithelioma, and, accordingly, unnecessary biopsy, surgery, or irradiation is done.

Retardation of Bone Growth: Editorial, *J. A. M. A.* 127: 713, March 24, 1945.

The problem of equalization of the length of the legs arises in children and in young adults as the result of the healing of overriding fractures, injuries to the adjacent epiphysis from joint or bone infection, bone tumors, and congenital deformities. The methods employed for equalization of length consist in lengthening the short limb, shortening the long limb, arresting the bone growth of the longer extremity by destroying the epiphysal cartilaginous plate, and stimulating bone growth of the shorter limb by lumbar sympathectomy or by direct irritation of the epiphysal cartilaginous plate.

In a series of experiments on dogs, in which an attempt was made to stimulate bone growth by inserting two different kinds of metal into and around the epiphysal plate, Haas observed that in one animal in which a free wire loop was placed around the epiphysal plate in the frontal plane the wire loop opened as growth took place and the epiphysis grew distally. Comparison of the two extremities at the conclusion of the experiment indicated that there was a loss of growth in the limb with the wire loop. Haas repeated the experiment on a number of dogs and became convinced that longitudinal growth of bone could be mechanically hindered by passing a wire loop around the epiphysal plate to bind the epiphysis to the diaphysis. The method was employed in treating two patients with discrepancy in the length of the legs resulting from poliomyelitis. A stainless steel wire was passed through the epiphysis and the ends were turned proximally. A similar wire was passed through the metaphysis and the ends were turned distally. The two wires were then hooked together under tension. From March 4, 1941, to July 12, 1944, there had been 1.3 cm. more growth on the short than on the normal side. The operation was performed on five patients.

Haas points out that determination of the practicability of this method to control bone growth must await the results obtained after a long period, since growth is relatively slow in man. However, growth of bone can be controlled by alternately releasing or tying the wire loops. The method presents a theoretical advantage over resection of the epiphysal plate because its effect is only temporary.

The Wide Significance of Nutritional Deficiency: Editorial, *Am. J. Pub. Health* 35: 273-275, March, 1945.

The beneficial influence of satisfactory nutrition on growth begins in the womb. The causes of many complications during pregnancy and of difficult labor have long been obscure. As for the condition of the infant, it has been sometimes maintained that under conditions of nutritional adversity the expectant mother suffers all the untoward effects, while the fetus is protected. Yet no less than ten studies bearing on the relation of nutrition to pregnancy have yielded results indicating the benefits for both mother and child of improved nutrition. Reporting on one of the latest and completest of such studies, Bertha S. Burke has submitted evidence that puts the matter beyond peradventure. A relationship was found between the expectant mother's dietary habits and the course of her pregnancy and parturition, particularly the incidence of toxemia and difficult types of delivery. Also the dietary practice of the expectant mother during pregnancy was directly related to the condition of the infant at birth and within the first two weeks of life. Thus, not only the expectant mother's course in gestation and labor, but also the health of the child is dependent on nutrition during pregnancy. This principle is ready for application in prenatal programs, both for improving the course of pregnancy and labor and for further lowering infant morbidity and mortality rates.

In another article in the symposium, Josef Warkany records that with experimental animals he has repeatedly induced by faulty diets developmental defects of a type often attributed to genetic causes. Such abnormalities as syndactylism, brachydactylism, and cleft palate occurred when the maternal diet was deficient in riboflavin; changes appeared in the ribs when vitamin D was inadequate. Even more recently, developmental defects have been reported as appearing in the eyes of the young when the maternal diet is low in vitamin A. Thus, certain anatomic abnormalities developed in utero are directly related to maternal malnutrition.

Periodontal Diseases: By Arthur H. Merritt, M.S., D.D.S., Sc.D., F.A.A.P. Third edition. Cloth. Pp. 256, with 53 illustrations. New York, The Macmillan Co., 1945.

In the preface to his book, Merritt states: "In the preparation of this new edition of 'Periodontal Diseases,' the author has had in mind several objectives. One of these has been to make it as helpful and practical as possible. To accomplish this, the attempt has been made to present the subject in a concise and accurate manner, stripped of all its fads and fancies."

The distinguishing and valuable feature of this edition, which makes it a great improvement over the preceding ones which also gave ample space to diagnosis, is the addition of several chapters on "Soft Tissue Lesions of the Oral Cavity," in keeping with the growing interest in this phase of the subject. These help round out information on oral lesions beyond the gingivae, with which not only the periodontist but every general dental practitioner should be equipped, for the mutual benefit of the patient, his dentist, and the physician. These chapters (which constitute Part Two) include descriptions (some illustrated) of pigmentation, lesions caused by avitaminosis, infection, and the various blood dyscrasias, as well as some of unknown etiology.

A pocket-sized, light, and comparatively inexpensive volume, it has a fund of *practical* information stored away in it, the accumulation of many years of close, sober, and mature observation in the practice of periodontia. To the general practitioner desirous of a more intimate knowledge of the practice of periodontia, this easily readable material should prove "all meat."

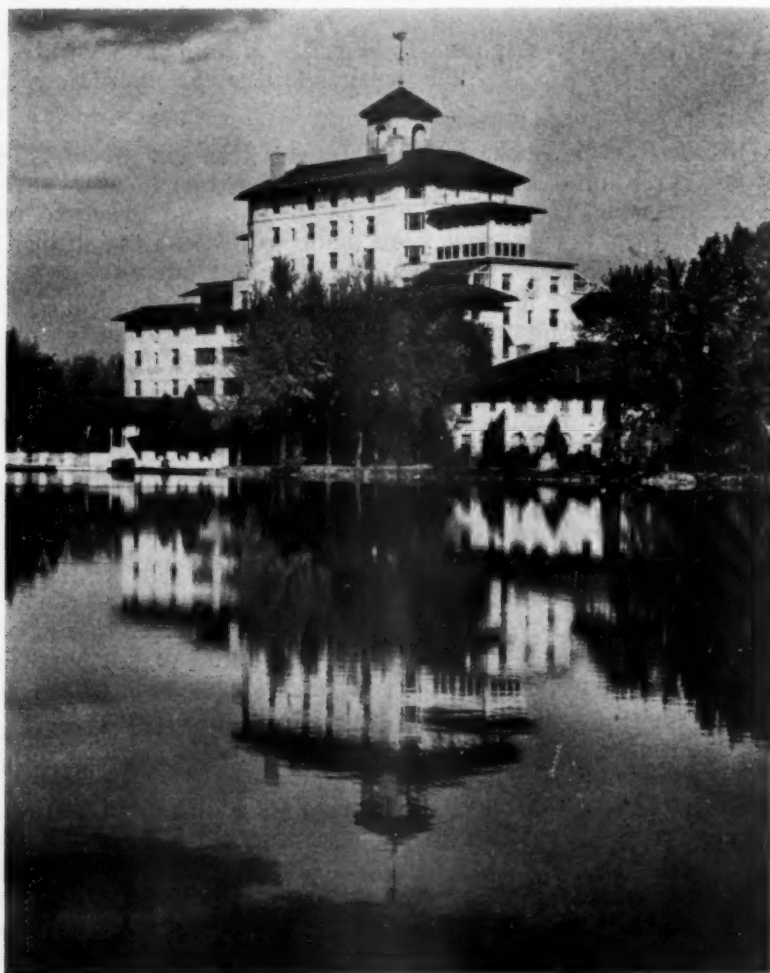
Under "Treatment," Merritt points out that, whereas until quite recently all periodontists were divided into two groups—the "conservatives" and the "radicals"—and that "usually the conservatives knew nothing of surgery as applied to periodontia, and the radicals were equally ignorant of the delicate technique necessary to successful treatment by subgingival curettage," however, more recently, many of the operators who had successfully "mastered the difficult technique" of subgingival curettage, now recognize the potentialities of surgery in selected cases, and do not hesitate to resort to it frequently when indicated. In keeping with this fact, a number of chapters are devoted, respectively, to subgingival curettage, the flap operations, gum resection, and electrocoagulation.

The reviewer feels that every conscientious dental practitioner should have close acquaintance with this volume.

J. Hirschfield.

News and Notes

Meeting of American Association of Orthodontists



BROADMOOR HOTEL

Announcement has been received that the week of Sept. 30, 1946, has been officially designated as the date for the next meeting of the American Association of Orthodontists.

The meeting will be held at the spacious Broadmoor Hotel, Colorado Springs, Colorado.

Southwestern Society of Orthodontists
SILVER ANNIVERSARY MEETING
SKIRVIN HOTEL, OKLAHOMA CITY, OKLA.
JAN. 20 TO 23, 1946

SUNDAY

4:00 Board of Directors Meeting, Directors Suite.

MONDAY

Anonymous Quiz Clinic

Extraction or Nonextraction Case

Make your diagnosis and vote anonymously.

Clinic will run first two days of meeting.

8:10 Registration, Mezzanine Floor.

10:00 Meeting called to order by President Harry H. Sorrels, D.D.S., Oklahoma City, Okla.
 Silent Prayer

Welcome Home Veterans, T. G. Duckworth, D.D.S., San Antonio, Texas.

Presentation Special Guests

President's Address, Harry H. Sorrels, D.D.S., Oklahoma City, Okla.

10:30 Our History, Paul G. Spencer, D.D.S., Boerne, Texas.

11:00 Comment on Our History, H. C. Pollock, D.D.S., St. Louis, Mo.

Discussors:

Archie B. Brusse, D.D.S., Denver, Colo.

W. E. Flesher, D.D.S., Oklahoma City, Okla.

12:00 Luncheon—Business Meeting, Rose Room—14th Floor.

Southwestern Society and American Society of Orthodontists—Members only.

2:00 Oppenheim Theory, Bone Metabolism.

Mediator:

Wm. R. Humphrey, D.D.S., Denver, Colo.

Interrogators:

George R. Moore, D.D.S.

George R. Warner, M.D., D.D.S.

Wayne White, D.D.S.

W. E. Flesher, D.D.S.

Ed. Arnold, D.D.S.

George Natgamoto, D.D.S., M.D., S.C.

3:00 Diagnosis and Prognosis, George R. Moore, D.D.S., Chairman, Department of Orthodontics, School of Dentistry, University of Michigan, Ann Arbor, Mich.

Aid to Essayist, Francis Calmes, D.D.S., Department of Orthodontics, Kansas City University, Kansas City, Mo.

4:00 Business Forum.

Office Management.

A. Receiving Room.

Brooks Bell, D.D.S., Dallas, Texas.

Business Office.

Public Relations.

Transfer Cases.

Questions.

B. Clinical Records.

Louis S. Winston, D.D.S., Houston, Texas.

Operatory.

Casts.

Appliance Files.

Questions.

C. Basis of Charges.

Tullie W. Sorrels, D.D.S., Oklahoma City, Okla.

Orthodontic Services.

Questions.

Aid to Essayists, Clarence W. Koch, D.D.S., Little Rock, Ark.

5:00 Indoctrination Committee Meeting, Directors Suite.

to Homer B. Robinson, D.D.S., Chairman

7:00 W. E. Flesher, D.D.S.

Hamilton D. Harper, D.D.S.

Ed. Arnold, D.D.S.

Clarence Koch, D.D.S.

All applicants for membership to appear before Board during these hours by appointment.

TUESDAY

10:00 Table Clinics, Walter E. Lipscomb, D.D.S., Houston, Texas, Chairman.

12:00 Luncheon—No planned lunch together.

2:00 Treating Injuries of the Teeth of Children, L. A. Lucas, D.D.S., Oklahoma City, Okla.

Aid to Essayist, Don A. Closson, D.D.S., Kansas City, Mo.

3:00 Diagnosis and Prognosis, George R. Moore, D.D.S., Ann Arbor, Mich.

Aid to Essayist, Marion A. Flesher, D.D.S., Oklahoma City, Okla.

4:00 Radiography, George R. Warner, M.D., D.D.S., Denver, Colo.

Aid to Essayist, J. Stier Cunningham, D.D.S., Houston, Texas.

5:00 Adjourn.

6:00 Social Hour—President's Reception, Rose Room—14th Floor.

Southwestern Society of Orthodontists.

Oklahoma County Dental Society.

Local Committee

Officers, Oklahoma County Dental Society:

Immediate Past President - - - - - Frank P. Bertram, D.D.S.

President - - - - - J. D. Mills, D.D.S.

President-Elect - - - - - Wm. E. Cole, D.D.S.

Secretary - - - - - John McHenry, D.D.S.

Delegate to Executive Council - - - - - David W. Matteson, D.D.S.

Alternate Delegate - - - - - Leo A. Makins, D.D.S.

And all members of Oklahoma County Dental Society.

7:00 Dinner.

8:00 Radiography, George R. Warner, M.D., D.D.S., Denver, Colo.

Aid to Essayist, John W. Richmond, D.D.S., Kansas City, Mo.

Questions.

9:00 Post-Graduate and Graduate Study, University of Michigan, George R. Moore, D.D.S., Ann Arbor, Mich.

Aid to Essayist, Marion A. Flesher, D.D.S., Oklahoma City, Okla.

Questions.

9:30 Adjourn.

WEDNESDAY

10:00 Diagnosis and Prognosis, George R. Moore, D.D.S., Ann Arbor, Mich.

Aid to Essayist, James C. Williams, D.D.S., Ft. Worth, Texas.

11:00 Preventive Orthodontics, Paul G. Spencer, D.D.S., Boerne, Texas.

Aid to Essayist, Wm. M. Pugh, D.D.S., Wichita, Kansas.

12:00 Luncheon—Business Meeting, Rose Room—14th Floor.

Southwestern Society and American Society of Orthodontists—Members only.

2:00 Radiography, George R. Warner, M.D., D.D.S., Denver, Colo.

Aid to Essayist, Fred E. Sims, D.D.S., Tulsa, Okla.

3:00 Until next meeting.

Aids to Essayists are to help with their physical needs and property.

New York Society of Orthodontists

On Sunday, Nov. 25, 1945, the President called together a group of Officers and Committeemen of the New York Society of Orthodontists to discuss the time and place of the next meeting.

It was decided, regardless of the difficulties in obtaining hotel accommodations, that the meeting be held on March 4 and 5, at the Waldorf-Astoria. Each member is urged to make reservation for himself as early as possible at the Waldorf-Astoria, or at another hotel in New York. Those suggested are:

Pennsylvania Hotel, 7th Avenue and 33rd Street
Shelton Hotel, Lexington Avenue and 49th Street
Commodore Hotel, Lexington Avenue and 42nd Street
Ambassador Hotel, Park Avenue and 51st Street
Park Lane Hotel, 299 Park Avenue

Mexican Orthodontic Society

The Fifth Medico-Dental Convention, organized by the Mexican Orthodontic Society, will be held in Mexico City, from Feb. 18 to 23, 1946. Orthodontists and dentists from the United States, Canada, Cuba, Central and South America, are very cordially invited. Dr. S. Fastlicht, Secretary, Av. Madero 40, Mexico City, Mexico.

Thomas P. Hinman Mid-winter Clinic

The Thomas P. Hinman Mid-winter Clinic, under the auspices of The Fifth District Dental Society, will hold its thirty-third annual meeting on March 24, 25, 26, and 27, 1946, at the Atlanta City Auditorium in Atlanta, Georgia.

Philadelphia Society of Orthodontists

The Philadelphia Society of Orthodontists was formally organized on Monday, Nov. 19, 1945, at the Benjamin Franklin Hotel, Philadelphia, with the adoption of the Constitution and By-laws.

The President, Dr. John V. Mershon, presided. Officers for 1946 were elected as follows:

President: Dr. Frederick R. Stathers
269 South 19th Street, Philadelphia, Pa.
President-Elect: Dr. Wm. B. Jones
255 South 17th Street, Philadelphia, Pa.
Treasurer: Dr. Augustus L. Wright
255 South 17th Street, Philadelphia, Pa.
Editor: Dr. Richard H. Stucklen
1003 Delaware Ave., Wilmington, Delaware.

Dr. George Anderson presented a paper on the treatment of distocclusion, illustrated with slides.

15,000 Physicians, 5,000 Dentists Made Eligible for Discharge

In line with its policy of returning doctors and dentists to civilian life as rapidly as the Army's medical needs decline, the War Department has made an additional group of 15,000 physicians and 5,000 dentists eligible for discharge.

Announcement of the new eligibility standards was made by Secretary of War Robert P. Patterson at the same time that he received a report from Major General Norman T.

Kirk, The Surgeon General, showing that discharges of Army doctors were now running six weeks ahead of the schedule announced on September 14. Discharges of dentists are four weeks ahead of schedule.

Since V-E Day, more than 15,000 physicians have been released from the Army. Under the original schedule, 13,000 were to have been returned to private practice by January 1. The 15,000 already released represent nearly one-third of the total number in the Army at the time of the German surrender. With the additional group made eligible by this recent announcement, two-thirds of the physicians in the Army as of V-E Day will be eligible to resume civilian practice.

Release of dentists since Germany's defeat totals more than 3,500. The original schedule called for the release of this number by January 1. The peak strength of the Dental Corps was 15,000. The 8,500 dentists discharged or made eligible under the new standards represent more than 55 per cent of this strength.

To effect the additional discharges, the critical score for physicians and dentists has been reduced from 80 to 70, effective immediately. The score of 70 for medical personnel is 3 points below the December 1 score for officers in other branches of the Army, and is designed to insure the speediest possible release of men needed in their home communities to provide medical care to the civilian population.

The time factor for physicians and dentists has also been cut. Instead of service prior to Pearl Harbor, medical personnel will now be eligible for release if they have had forty-two months of honorable service. This compares with a requirement of four years and three months service for officers outside the Medical Department. In addition, any physician or dentist who is 48 years of age to his nearest birthday is eligible to return to civilian life.

The new standards will apply to all Medical Corps officers except for those in certain scarce categories. For plastic surgeons; eye, ear and nose specialists; orthopedic surgeons and internal medicine specialists, the discharge requirement will be 80 points or continuous service since Pearl Harbor. A requirement of 70 points or forty-five months of service has been established for gastroenterologists; cardiologists, urologists, dermatologists, anesthesiologists, psychiatrists, general surgeons, physical therapy officers, radiologists, and pathologists.

The number of doctors in these categories is relatively small but they are essential to the effective care of the 115,000 sick and wounded patients returned from overseas who are now in Army General Hospitals in this country. In the case of all Medical Department officers, provision is made for their retention on duty for a period of not more than ninety days if their services are essential and no replacement is available.

Secretary Patterson has directed that transportation priority be given to medical personnel eligible for return from Europe and the Pacific in order that there may be no delay in their arrival in this country. He has also designated two officers to go to Europe as his personal representatives to make an exhaustive investigation of the release of medical officers there. A similar investigation was recently completed in the Pacific area.

The liberalized standards announced today apply not only to doctors and dentists but to nurses and other Medical Department personnel. The point score for nurses has been cut from 35 to 25 and the discharge age from 35 to 30. Nurses will also be eligible for discharge after two years of service. Those on duty in the United States who are classed as limited service have been added to the list of those qualified for discharge. It is estimated that this will make 12,500 nurses eligible for release, in addition to the 27,000 who have already been qualified to return to civilian life. Twenty-two thousand nurses have been discharged to date. The peak strength of the Army Nurse Corps was 57,000.

For officers of the Medical Administrative Corps the score has been dropped from 70 to 60, and the pre-Pearl Harbor service requirement has been eliminated and the time of service required for discharge cut to forty-two months. The age requirement stays at 42 for MAC officers. Four thousand officers are made eligible for discharge under the new standards.

The score for physical therapists has been reduced from 40 to 25 and the age requirement from 40 to 30. Two years of service will also qualify a physical therapist for discharge. Five hundred women officers are affected.

Three hundred additional dietitians have been made eligible to leave the Army by a cut in their score from 40 points to 30 and in their age requirement from 40 to 35.

Officers of the Sanitary Corps will need 60 points for discharge, instead of 70. They will also qualify for release if they have had forty-two months of service or are 42 years old. For officers of the Veterinary Corps the score has been cut from 80 to 70. It is estimated that 350 Sanitary Corps officers and 400 Veterinary Corps officers will leave the service as a result of the liberalized rules. The following chart shows the revised Medical Department criteria:

<i>Corps</i>	<i>ASR</i>	<i>Service</i>	<i>Age</i>
Med. Corps	70	42 mo.	48
Dental Corps	70	42 mo.	48
Med. Admin. Corps	60	42 mo.	42
*Nurses	25	24 mo.	30
*Phys. Therapists	25	24 mo.	30
*Dietitians	30	not a factor	35
San. Corps	60	42 mo.	42
Vet. Corps	70	42 mo.	42

Bert Shepard Assigned to the Office of the Surgeon General

First Lieutenant Bert Shepard, who attracted nation-wide attention last summer when he resumed his professional baseball career as pitcher for the Washington Senators three days after receiving his GI artificial leg from Walter Reed General Hospital, has reentered the service at the request of The Surgeon General to aid in a program designed to help amputees get the greatest use from their prostheses.

In May, 1944, Lieutenant Shepard's P-38 was shot down over Germany. He suffered the loss of the lower part of his right leg, the operation being performed by German surgeons. After eight months in German hospitals and prison camps, he returned to the United States aboard the Gripsholm in February of this year.

Wearing a crude artificial leg fashioned from Red Cross materials by a fellow Canadian prisoner, Lieutenant Shepard was sent to Walter Reed General Hospital, where he received a GI prosthesis. Within three days after his fitting, he was working out with the Washington Senators and later signed with them. He plays football and has been clocked in the 100-yard dash at 12.05 seconds. He is the wearer of the Distinguished Flying Cross, Air Medal with three clusters, and the Purple Heart.

Distinguished Service Medal to General Mills

Major General Robert H. Mills, Director, Dental Division, Office of The Surgeon General, has been awarded the Distinguished Service Medal, which was presented by Major General Norman T. Kirk, for his performance of "exceptionally meritorious service in a position of great responsibility."

Born in Decatur County, Georgia, General Mills studied two years at the Southern Dental College in Atlanta, Georgia, and completed his dental education at the University of Maryland Dental School. He entered the Army in 1909 as a contract dental surgeon and was commissioned a Dental Surgeon with the rank of Captain in 1911. In 1917, then a Lieutenant Colonel, he served with the AEF in France, and later completed two tours of duty in the Philippines. He was for four years Director of the Army Dental School. General Mills is a Fellow of the American College of Dentists and a member of the American Dental Association. He was promoted to the rank of Major General in 1943.

*Married or have dependents or are limited service in the U. S. are eligible for separation, regardless of points, length of service, or age.

The citation accompanying his award said: "With exceptional foresight, organizing ability and leadership, he provided and maintained a superior dental service, based on sound plans and professional policies, for the millions in the Army. Under his guidance the Army Dental Corps was expanded from several hundred to more than fifteen thousand officers, and dental facilities, including clinics and laboratories, were expanded proportionately. The dental rehabilitation of more than a million men accomplished under his supervision represented a tremendous contribution to the conservation of fighting manpower and to the future health of the nation. He skillfully coordinated the activities of the Dental Corps with other Federal agencies and the civilian dental profession. Through his unremitting efforts to achieve exceptional standards of dental care General Mills made a notable contribution to the war effort."

The award was presented at the beginning of a two-day conference of Service Command Dental Surgeons, which was under the direction of General Mills.

General Kirk Speaks on World War II Casualties

Sixty-three per cent of the wounds received in World War II were those of the upper and lower extremities, with the lower extremities the heaviest proportion, according to Major General Norman T. Kirk, Surgeon General of the Army, who spoke recently before the Milwaukee Association of Commerce.

"There were 207,754 men of the United States Army killed in action and 571,490 wounded," General Kirk stated. "Of those wounded, 363,322 returned to duty after hospitalization and 25,145 died. These figures indicate that the rate of those wounded who died was nearly twice as great in World War I."

Of the 15,000 amputees of World War II, 14,000 needed artificial limbs, 7,000 of whom still remain in general hospitals. The balance either returned to civilian life or remained on duty as instructors for other amputees, the General continued. There have been two quadruple amputations and nine triple amputations recorded in World War II. Of the 14,000 needing prostheses, 95 per cent have lost one arm or leg, and 5 per cent have suffered two major amputations.

Outlining the Army's job in medical care and rehabilitation of the wounded, General Kirk also stressed the part of the American public in helping the returned veteran, and concluded, "Too many men in the last war became social derelicts because too little responsibility was assumed by business and industry in placement of the individual in a job commensurate with disabilities. Those men have won the war, now let us help them win the peace."

Medical and Surgical Relief Committee

From October to date, dentists, supply houses and dental laboratories have contributed \$17,000 worth of dental supplies, including \$10,415.16 worth of porcelain teeth, to the Medical and Surgical Relief Committee for the use of the French Red Cross. The French dental profession has been almost helpless in its struggle to provide adequate dental care for the millions who so urgently need it, because of lack of instruments and supplies. Such materials as were not destroyed or lost through the accidents of war, were appropriated by the Germans. Some communities were left without any means whatsoever of combating disease or alleviating suffering.

Among those dental firms whose generosity will enable some French dentists to practice again are the Universal Dental Company, S. S. White Dental Company, Dental Research and Sales Company, Justi and Son, and Rubinstein Dental Equipment Corporation. All those who can possibly do so, are urged to send any supplies they can, particularly porcelain teeth, and forceps, as the need is still great.

The Medical and Surgical Relief Committee, active in relief work since 1940, has donated \$761,348.50 worth of medical, surgical, and dental materials to civilian and military organizations all over the world.

New Army Camera Features Self-Contained Light Source

The Army's Pictorial Service has developed for the use of The Surgeon General's Office a camera which uses an ultra high-speed, high intensity, self-contained light source, the War Department has announced.

The new device is as simple in operation as a box camera. It enables anyone to take color or black and white still pictures of the fastest action, indoors and outdoors, at distances of from 6 inches to 12 feet.

The light source is built into the camera proper. Every phase of the picture-taking operation, except focusing and clicking the shutter, is absolutely automatic.

The camera was developed at the request of the Army's Surgeon General by the Pictorial Engineering and Research Laboratory Division of the Signal Corps Photographic Center, Long Island City, New York, from an idea originally conceived by Captain Rollin W. King and Mr. Emanuel Berlant. It enables photographically unskilled amateurs to take the most perfect pictures yet obtained of surgical operations, and has also been found highly valuable in the work of the Corps of Military Police and Ordnance Department.

The industrial possibilities of this camera have not been explored by the Army. It weighs approximately 5½ pounds, is operated from a portable electric power pack, which weighs approximately 27 pounds, and it may be plugged into any ordinary current line. The camera uses 35 mm. film and contains its own built-in light source, a coiled circular quartz vapor discharge tube. The tube, designed and constructed by the General Electric Company, gives a flash of approximately 1/25,000th of a second duration, too short a period of time to harm the eye.

The device has been used by the Medical Corps to photograph open eyes at close-up ranges. It is estimated that the flash tube is capable of withstanding the strain of 50,000 flashes, each of which, at its peak intensity, is brighter than sunlight. The brilliance of the flash is so great that the surrounding general illumination of the subject need not be taken into consideration.

Due to the extremely rapid flash discharge, the camera has a phenomenal motion-stopping ability, which is capable of "freezing" the whirring of a moving fan blade.

Four models of the camera are now in existence, and others are being developed.

Facts on Use of DDT

Since the proper use of DDT requires special knowledge and training, a bulletin has been published as a technical guide for the Army to its safe and efficient use, Major General Norman T. Kirk, Surgeon General of the Army announced today. The publication contains information on the precautions to be taken in handling DDT, its mode of action in insect control, and the proper methods of application of the DDT insecticide items issued by the Army.

It is emphasized that, although DDT may be safely handled as an insecticide, it is, nevertheless, a toxic material. Poisoning may occur from ingestion of DDT or by absorption of DDT solutions through the skin. DDT powder and creosols are not absorbed through the skin, and have been found to produce no ill effects when inhaled in small amounts. However, in conditions where air currents do not carry away the dust from the user, it is wise to wear suitable respirators as protection against excessive inhalation.

DDT acts on insects both as a contact poison and as a stomach poison. Studies have shown that the poisonous effect of DDT on mosquito larvae is fully as powerful as that on the adult insect, although on some other insects, such as flies, the larvae are not equally affected by the insecticide. In applying DDT as a mosquito larvicide to open water receptacles, a prolonged effect may be obtained because of the residual action of the chemical. However, in applying it to natural water bodies the effect is much shorter, due to the binding action of mud in the water, which apparently checks the effectiveness of DDT. It should also be considered that amounts of DDT greater than 0.2 pound per acre may prove fatal to fish and wild life. For extermination of insects such as ants, roaches, fleas, bedbugs, and flies, DDT

oil solution or powder should be used, with particular attention to cracks, holes, and seams in walls, floors, and bedding, as indicated. One of the most valuable characteristics of DDT lies in its tendency to remain deadly to insects over a prolonged period of time. In applying DDT solutions to walls and other large surface areas, a coarse spray is usually employed, but in applying it to screens or mesh surfaces, ordinary paint brushes may be used. Although the effectiveness of the treated areas against insects persists for some time, the insects which come in contact with the chemical may not die until an hour or more has elapsed, and immediate death should not be expected.

When applying solutions of DDT in kerosene, precautions concerning the inflammability of the kerosene should be observed. Care should be taken to keep electric motors and other sparking or heating apparatus from the zone of spray. No open fires or smoking should be permitted until the spray has dried and ventilation is complete. The kerosene in the solution is harmful to rubber equipment and may cause a mild skin irritation when in contact with the skin.

Thanks to the magic properties of DDT, many lives have been saved in this war and much disease prevented. Extermination of disease-carrying insects has reduced the incidence of typhus, malaria, and other ravaging diseases of the war areas.

Although rapid progress has been made in the development of DDT since it first made its appearance in the field of science, much remains to be learned before its full potentialities in insect control can be realized. Signs of progress are evident in the spraying of large areas by aircraft, the mass delousing of communities in Europe, and the better methods of manufacture. Investigation is continuing on every aspect of DDT, however, in search of new and extensive improvements in everything from its chemical beginning to its final application in the field.

Notes of Interest

Dr. W. Frank Wilson announces that Dr. James L. Wilson, recently released as assistant dental surgeon in the United States Coast Guard, is now associated with him, 602 Richmond Trust Building, Mansfield, Ohio. Telephone, 3616-6. Practice limited to orthodontics.

Dr. Bernard H. Schanbam announces the removal of his office to One Duncan Avenue, corner Bergen Avenue, Jersey City 4, N. J. Telephone, BErgen 4-0750. Practice limited to orthodontics.

Dr. Gerald Franklin announces that he has retired from service in the Canadian Dental Corps and that he has reopened his former office for the practice of orthodontics, Suite 915, Drummond-Medical Building, 1414 Drummond Street, Montreal 25, Quebec.

James M. Jolly, D.D.S., announces the removal of his office to 920 University Club Building, Grand and Washington, St. Louis 3, Missouri.

Willis H. Murphey, D.D.S., recently released from the United States Coast Guard as dental surgeon in the United States Public Health Service Reserve, announces that he has resumed the practice of orthodontics, 1216 Medical Arts Building, Fort Worth, Texas.

Dr. J. Diaz Zayas-Bazan announces his present location at 23 No. 307, Vedado, La Habana, Cuba. Practice limited to orthodontics.

Dr. S. Schlossman, dentist, announces the removal of his offices to 26 Court Street, Brooklyn 2, New York.

Charles S. Jonas, D.D.S., announces the reopening of his offices, Medical Sciences Building, 101 South Indiana Avenue, Atlantic City, New Jersey.

Dr. Henry Renedo, Jr., wishes to announce that he has been released from active duty with the Armed Forces, and will be associated with Dr. Herman W. Cook, at 1001-1006 Olympia Building, Miami, Fla., in the exclusive practice of orthodontics.

OFFICERS OF ORTHODONTIC SOCIETIES*

American Association of Orthodontists

President, Archie B. Brusse - - - - - 1558 Humboldt St., Denver, Colo.
President-Elect, Earl G. Jones - - - - - 185 East State St., Columbus, Ohio
Vice-President, Will G. Sheffer - - - - - Medico-Dental Bldg., San Jose, Calif.
Secretary-Treasurer, Max E. Ernst - - - 1250 Lowry Medical Arts Bldg., St. Paul, Minn.

Central Section of the American Association of Orthodontists

President, Arthur C. Rohde - - - - - 324 E. Washington Ave., Milwaukee, Wis.
Secretary-Treasurer, L. B. Higley - - - - - 705 S. Summit St., Iowa City, Iowa

Great Lakes Society of Orthodontists

President, Willard A. Gray - - - - - Medical Arts Bldg., Rochester, N. Y.
Secretary-Treasurer, C. Edward Martinek - - - - - 661 Fisher Bldg., Detroit, Mich.

New York Society of Orthodontists

President, Raymond L. Webster - - - - - 155 Angell St., Providence, R. I.
Secretary-Treasurer, Norman L. Hillyer - - - - - Professional Bldg., Hempstead, N. Y.

Pacific Coast Society of Orthodontists

President, J. Camp Dean - - - - - 1624 Franklin St., Oakland, Calif.
Secretary-Treasurer, Earl F. Lussier - - - - - 450 Sutter St., San Francisco, Calif.

Rocky Mountain Society of Orthodontists

President, Henry F. Hoffman - - - - - 700 Majestic Bldg., Denver, Colo.
Secretary-Treasurer, George H. Siersma - - - - - 1232 Republic Bldg., Denver, Colo.

Southern Society of Orthodontists

President, Amos S. Bumgardner - - - - - Professional Bldg., Charlotte, N. C.
Secretary-Treasurer, Leland T. Daniel - - - - - 407-8 Exchange Bldg., Orlando, Fla.

Southwestern Society of Orthodontists

President, Harry Sorrels - - - - - Medical Arts Bldg., Oklahoma City, Okla.
Secretary-Treasurer, James O. Bailey - - - - - Hamilton Bldg., Wichita Falls, Texas

American Board of Orthodontics

President, Frederic T. Murlless, Jr. - - - - - 43 Farmington Ave., Hartford, Conn.
Vice-President, Joseph D. Eby - - - - - 121 E. 60th St., New York, N. Y.
Secretary, Bernard G. deVries - - - - - Medical Arts Bldg., Minneapolis, Minn.
Treasurer, Oliver W. White - - - - - 213 David Whitney Bldg., Detroit, Mich.
 James D. McCoy - - - - - 3839 Wilshire Blvd., Los Angeles, Calif.
 Claude R. Wood - - - - - Medical Arts Bldg., Knoxville, Tenn.
 James A. Burrill - - - - - 25 E. Washington St., Chicago, Ill.

Harvard Society of Orthodontists

President, Francis J. Martin - - - - - 1074 Centre St., Newton, Mass.
Secretary-Treasurer, Edward I. Silver - - - - - 80 Boylston St., Boston, Mass.

*The Journal will make changes or additions to the above list when notified by the secretary-treasurer of the various societies. In the event societies desire more complete publication of the names of officers, this will be done upon receipt of the names from the secretary-treasurer.

Washington-Baltimore Society of Orthodontists

President, Francis M. Murray - - - - - 1029 Vermont Ave., N.W., Washington, D. C.
Secretary-Treasurer, William Kress - - - - - Medical Arts Bldg., Baltimore, Md.

St. Louis Society of Orthodontists

President, Virgil A. Kimmey - - - - - 3722 Washington Ave., St. Louis 8, Mo.
Vice-President, Leo M. Shanley - - - - - 7800 Maryland Ave., Clayton 5, Mo.
Secretary-Treasurer, Everett W. Bedell - - - - - 1504 S. Grand Blvd., St. Louis 4, Mo.

Philadelphia Society of Orthodontists

President, John V. Mershon - - - - - 1520 Spruce St., Philadelphia 2, Pa.
Vice-President, Frederick R. Stathers - - - - - 269 S. 19th St., Philadelphia, Pa.
Secretary-Treasurer, Augustus L. Wright - - - - - 255 S. 17th St., Philadelphia 3, Pa.

Foreign Societies***British Society for the Study of Orthodontics**

President, S. A. Riddett - - - - - 42 Harley St., London, W. 1, England
Secretary, R. Cutler - - - - - 8 Lower Sloane St., London, S.W. 1, England
Treasurer, Harold Chapman - - - - - 6 Upper Wimpole St., London, W. 1, England

Sociedad de Ortodoncia de Chile

President, Alejandro Manhood - - - - - Avda. B. O'Higgins 878
Vice-President, Arturo Toriello - - - - - Calle Londres 63
Secretary, Rafael Huneeus - - - - - Calle Agustinas 1572
Treasurer, Pedro Gandulfo - - - - - Calle Londres 63

Sociedad Argentina de Ortodoncia

President, Vicente A. Bertini
Secretary, Ludovico E. Kempter
Treasurer, Edmundo G. Locci

Sociedad Peruana de Ortodoncia

President, Augusto Taiman
Vice-President, Ricardo Salazar
Secretary, Carlos Elbers
Treasurer, Gerardo Calderon

Asociación Mexicana de Ortodoncia

President, Guillermo Gamboa - - - - - Madero 34-3
Secretary, Rutilio Blanco - - - - - Donceles 98-209
Treasurer, Carlos M. Paz - - - - - Av. Insurgentes 72

*The Journal will publish the names of the president and secretary-treasurer of foreign orthodontic societies if the information is sent direct to the editor, 8022 Forsythe, St. Louis 5, Mo., U. S. A.